

**STATUS AND VIABILITY OF WOOD BASED INDUSTRY
IN DISTRICT ANANTNAG WITH SPECIAL REFERENCE
TO CRICKET BAT INDUSTRY**

DISSERTATION

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Partial Fulfillment of the Requirement for the
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in

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BY

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**Under the Supervision of
Dr. Imtiaz-ul-Haq**



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CERTIFICATE

The Dissertation entitled, "Status and Viability of Wood Based Industry in District Anantnag with Special Reference to Cricket Bat Industry" submitted by Bilal Ahmad Dar for the partial fulfillment of the requirement for the degree of **Master of Philosophy in Economics (M.Phil)** is a research work done under my supervision and guidance. The candidate has fulfilled all the statutory requirements for the submission of the dissertation.

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DECLARATION

This dissertation is the result of an independent investigation. Wherever, the work is indebted to the work of others it has been acknowledged and cited.

I declare that this dissertation has not been accepted in substance for any other degree or diploma nor is it concurrently being submitted in candidature or achievement of any other degree at any other university.

Bilal Ahmad Dar
Research Scholar

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Bilal Ahmad Dar

DEDICATED

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CHAPTER –1

INTRODUCTION

The state of Jammu and Kashmir is a core of good mineral base, substantial water resources and is famous world over in its handicrafts, tourism, cottage industries and wood base industries. The valley offers a distinct free environment which is perfect for the development of industrial units. Many small and medium scale industries have come up basically in the traditional sector along with some new areas like food processing, agro based units, wood based units etc. The total number of permanently registered small scale industrial units (SSI) at the end of Nov. 2010 stood at 53157, generating 247065 employment opportunities. Out of these SSI units, 526 units were registered during the year ending Nov., 2010, providing employment to 3654 persons. Wood industry is among one of the most important industrial units.

1.1. Wood Based industry

The industry that utilizes various woods such as Willow, Popular, Mulberry, Walnut etc. for its raw material is known as wood based industry. It is that industry which carries out the mechanical and chemical treatments and processing of timber. It is the industry which produces sawn woods, ply woods, matches, furniture, and sports goods. In fact this industry is most famous in the entire country. In Jammu and Kashmir this industry has grown up consistently in the last few years. The industry provides bread and butter to thousands of people in the state. Out of 22 districts of Jammu and Kashmir, district Anantnag is the only district where people are largely engaged in this industrial activity. Some important wood based industries in this district include, wooden

furniture industry, wood turning industry, wood beading industry, wooden toys industry, manufacturing of shooks and cricket bats industry.

One of the major wood based industry is Cricket Bat industry. The origin of the industry in Kashmir is supposed to be from Sialkot Pakistan. The technical know-how was imported from England. This trade flourished in those areas of Kashmir where raw material was substantially available. Those persons, who at that time were financially sound, established their units at Halmullah in Tehsil Bijbehara of district Anantnag. More and more people especially at Halmullah, Sangam, Sather and Bijbehara in district Anantnag got attracted towards this trade and established their own units because of the reasons:

- i. That the employment was easily available without any bar of academic qualification.
- ii. That the raw material was readily available in this belt in abundance.
- iii. That the demand from outside the state for cricket bats was quite attractive as this area lies on the National Highway.

The mechanical devices/machinery was readily available with certain people and was also imported from Meerut and Jalandhar. In the process of interstate trade, the Kashmir people succeeded in producing the quality finished products on the basis of their skill, technique and experience. This industry in the beginning was engaged in exporting the finished as well as semi-finished products to other states of the country.

Up to 1975-76, this business was going on the said pattern but the state government realized the fact that the precious raw material of Kashmir willow is being sold in raw form by Kashmir based unit holders. The Government became conscious that if the raw material is allowed to go like this, the precious Kashmir willow will not be left for more time and the people engaged in the trade for manufacturing the cricket bats have to close their units for want of raw material.

The cricket bat industry has an impressive reputation of making bats which are exported outside. The cricket bats are mostly manufactured from Willow trees. Presently the cricket bat industry has turnover of Rs114.4 crore per year. It is important to mention here that during the course of more than one century of making bats, Kashmir has gained a name and fame. In 1975 to 1980, there were only 25 units of cricket bats in district Anantnag and Pulwama of Kashmir division. It has grown to 273 units by the end of March 2009, in which district Anantnag alone has 195 units. Each unit manufactures on the average 15000 bats per annum. The cricket bat industry in Kashmir is already employing thousands of people and collectively exports thousands of cricket bats per year at a price ranging from rupees two hundred fifty to one thousand per bat.

1.2. STUDY AREA

Anantnag is one of the districts of Kashmir valley situated in south and south western direction. It lies geographically $33^{\circ} - 20'$ to $34^{\circ} - 55'$ north latitude and $74^{\circ} - 30'$ to $75^{\circ} - 35'$ east longitude. Its area is 3984 Sq Kms, population is 1070144, sex ratio 940 and literacy 66% (2011 census).

The district comprises 6 Tehsils. It is not only the rice bowl of the valley, but is also rich in many wood based cottage and small scale industries especially cricket bat industry. Among six tehsils, Bijbehara is one of the most important Tehsil and also constitutes our study area regarding the performance of cricket bat industry. The tehsil is dominant manufacturer of Cricket bats. It constitutes 40 villages and one community block. Some villages where cricket bat manufacturing is a dominant activity are Sangam, Sather, Pujteng, Mirzpur, Halmullah and Marhama.

1.3. OBJECTIVES OF THE STUDY

The present study has been under taken with the following objectives:

1. To analyse the performance of Wood based industry in District Anantnag.

2. To study the manufacturing mechanism and use of technology in the cricket bat industry.
3. To study the structure of market and market mechanism.
4. To evaluate the profitability and viability of cricket bat industry.
5. To examine the problems faced by this industry and to suggest further ways and means for improving the prospectus of their activity.

In consonance with the above objectives the following hypotheses have been laid down for empirical studies.

1.4. HYPOTHESES

1. Over the years, in District Anantnag, wood based industry has shown an improvement in the growth performance.
2. The cricket bat industry is economically a profitable enterprise.

1.5. A PLAN OF THE STUDY

Chapter-II: - Is based on review of literature, various concepts and methodology used in the study.

Chapter-III: - Is designed to know the status of wood based industry in District Anantnag. This chapter throws light on growth performance of some major wood based industries viz bat industry, shoo industry, furniture industry and ply wood industry in terms of important variables like production, sales and employment.

Chapter-IV: - Is designed to understand the manufacturing process and marketing of cricket bats. This chapter besides giving a detailed account of manufacturing and marketing of cricket bat provides an over view of value chain analysis of bat manufacturing.

Chapter-V: - Is based on analysis of the data gathered from the field survey, done in different villages of Tehsil Bijbehara district Anantnag. This chapter titled as “Cricket Bat Industry - An empirical study” is an attempt to study the cost structure and returns to investment in relation to the size of investment.

Chapter-VI: - In this chapter, we conclude ourselves with problems and suggestions.

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Chapter- 2

Literature Review, Concepts and Methodology

The present chapter deals with review of literature, concepts and methodology. In order to gain background knowledge of the problem and to identify appropriate methodology, research design, techniques of analysis, it is logical to present a brief review of available literature relating directly or indirectly to the field under study. However, it is pertinent to mention that the attempt to analyse the status and viability of cricket bat industry in the study area is first of its kind

Matoo Javid, (June 2009): points out that cricket bat manufacturing cluster is mostly concentrated in a 15 km radius along Jammu and Kashmir national highway between Bijbehara and Awantipora, due to which more and more people especially from Halmulla, Sangam, Sether, Bijbehara, Mirzapora etc places of District Anantnag got attracted towards this trade. The author also highlights that Cricket bat industry has a tremendous potential of absorbing unemployed educated youths and can contribute to the Gross State Domestic Product (GSDP). The Cricket bat industry will jump into national and international arena and create a place for the industry in competitive international market.

Nagaraj R, (1985): highlight various aspects of small scale sector like marketing of output, availability of inputs, nature of competition, pricing etc. In this article broad trends in the growth in number of small enterprises and some characteristics of structure were discussed. An attempt has also been made to highlight the rate, pattern and characteristics of the growth of small scale industries in India.

Rao. R. V, (1978): revealed that small scale industries provide employment to thousands of people in India. The author highlights that the political freedom

has no significance without economic freedom. The small scale industries have enough scope to provide work for large number of people in India. The author also gives main thrust to rural industrialisation i.e. rapid industrialisation of the village is a vital necessity for developing the country and making people economically better off.

Papola. T. S, (1982): highlights that industrialisation is as much as essential ingredient of rapid and self sustained development of rural areas as it is for the development of the entire economy. Rural industrialisation can serve as an effective means of reducing the imbalances and accelerating the process of development. It is therefore necessary that emphases should be laid on planning for the development of industries in rural areas.

Bhattacharya. S. N, (1986): the author has made an attempt to explain cottage and small industries viz-a-viz, Govt. policy in Indian economy during planning period. The author is also dwelt with select incentives, assistance and facilities for small scale and cottage industries i.e. development of infrastructure, good quality of raw material, transport, power, markets, finance etc.

Rana Kulwant, (1991): points out that during the five year plans the industrial structure has become considerably broad based as industries contribute to the national income as well as employment. The growth rate in industrial output has shown chequered trend in past. The period 1951-65 is characterised by a fast rate of growth i.e. 7.66 percent. The author is also dwelt with the fact that the pattern of industrialisation has been changing very fast i.e. the share of various industrial groups in the total value added has been grew from 38% in 1960-61 to 48% in 1979-80(basic goods and capital goods). The share of secondary sector to the national income has been fluctuating from a meagre 16% in 1966-67 to 28% in 1987-88.

Bhat Khursheed, (2000): explains that the industrial sector which possesses a relatively high marginal propensity to save and invest, contributes significantly to the eventual achievement of a self sustaining economy with continued high

levels of investment and rapid rate of increase in income and employment. The author also highlights that the state of Jammu and Kashmir lags behind both in industrial and agricultural development. During last two decades i.e. in 1973-74 there were just 2203 units which have grown to 36821 units as on 1995-96, providing employment to 154692 persons.

Patro Sachidananda, (2002): highlights an appraisal of Govt policies and growth of small scale industries in India as well as problems of small scale industries. The author is also dwelt with intuitional financing for small scale industries i.e. provision of money at the time it is required. In this article the author emphasizes various industrial policy resolutions i.e. 1948 and 1956. The need for the development of small scale, village and cottage industries was specially highlighted in the industrial policy of 1948. The author also highlights the various planning periods especially the second five year plan (1956-61) which is describes as industrial plan.

Shetty Shivakant (July 2008): explains that for improving the employment levels in the organised sector efforts are needed to attract Foreign Direct Investment (FDI) in the export oriented industries. This will help in improving the skills. FDI can be encouraged in this sector by reducing the relative cost of production. The author highlights the situations that provision of better infrastructure like cheap electricity, high quality raw materials and better transport can go a long way to reduce cost of production and this may put India into their value chain of production.

S. Chandra and Nalayini (April 2009): the authors are mainly concerned with performance and problems faced by small scale units. As small scale industries have an important role to play in achieving the plan objectives of increasing industrial production, generating addition employment and reducing regional imbalances of growth.

Kanuparthi, (July 2010): depicts that industrialisation has a major role to play in the socio economic development of the underdeveloped countries. The

author stresses that the industrialisation could be seen as an important phase in the development of a nation seeking to increase, improve and diversify the productive capacities and thereby raising the levels of income and standard of living of people.

Ragha Valu. M.V, (Dec 2010): stresses that village and cottage industries play a very significant role in the economy of Karnataka. The workers in these industries are self employed and their skills are reflected all over the state. The author highlights that industrial development of the state depends upon the prevalence of necessary industrial climate. The industrial climate consists important factors such as availability of financial and economic infrastructure, availability of skilled, technical and management persons. Besides, these govt. Policies, subsidies, incentives and others are very crucial for the healthy growth of industrial sector.

2.2. Concepts

To work out cost of production the following basic concepts and definitions are used in the study.

2.2.1. Production and cost: Production and cost are interrelated aspects of business. There cannot be production without cost and cost without production would be an unviable proposition. Production means creation of goods and services through the transformation of some other goods called raw materials. Normally it will be the plant and equipments used in the production. The other factors like labour and material inputs etc. will be varying with the level of output.

2.2.2. Total Cost: Total cost represents the value of the total resource requirements for the production of goods. Fixed and variable cost, together constitute total cost. Total cost (TC) = Fixed cost (FC) + Variable cost (VC).

2.2.3. Fixed Cost (FC): Costs which incurred even if there is no output are known as fixed costs. Some examples of fixed costs are: salary to top management staff, rental payment, insurance charges, depreciation, taxes etc.

Fixed costs will be maximum, when output is zero and their incidence will go on decreasing as output is extended beyond the zero level.

2.2.4. Variable Costs (VC): Costs which vary with the variation in the output are known as variable costs. Some examples of variable costs are: labour charges, raw material cost, fuel and power, transport cost, repair and maintenance etc.

2.2.5. Average Cost: It is the cost per unit of output produced. It is obtained simply by dividing the total cost (TC), by the total output (Q), i.e. $\frac{TC}{Q} = \text{Average cost}$. However in our analysis we have also employed average cost per unit in the three categories of units with different investment levels viz, industrial units with less than 20 lacs of investment (small), industrial units with investment between Rs 20-40 lacs (medium) and industrial unit holders with investment more than Rs 40 lacs (large).

2.2.6. Opportunity Cost: Opportunity cost is the value of a factor in its next best alternative use. It is the sacrifice of the alternatives that has been foregone in production of a commodity. In our study, it was found that next best alternative use of land, occupied by cricket bat manufacturing industry was calculated on the basis of rate of interest provided by the banks.

2.2.7. Rental Value: Computation of land cost for inclusion in the cost of production in the present study has been computed on the basis of rental value. Rental value of land in case of industrial unit holders was calculated on the basis of its opportunity cost i.e. next best alternative use of land foregone. Rental value has been calculated in terms of existing market value of land by taking into account savings rate of 8 percent per annum usually offered by the banks on the fixed deposit.

2.3. Input Costs: Input costs are divided into following headings.

2.3.1. Labour Cost: The wages of industrial labour constitutes an important component of cost of production in the cricket bat manufacturing industry. This includes:

A) Human Labour: The labourers are paid for working at machines, sawing and piling of wooden logs, packing of cricket bats etc. Human labour has been measured in terms of man days. A man day means eight hours of working by an adult industrial worker. The labour has been evaluated at prevailing market wage while as family labour engaged, in a few cases, was accounted for and charges estimated if they were paid in cash. Human labour constitutes;

i) Skilled Labour: A segment of work force with a high skill level that creates significant economic value through work performed. In the present study a labour force having a knowledge of how to run machines in the bat manufacturing units like Band saw, Kharad, Chook handle machine, Planner etc are skilled.

ii) Unskilled Labour: In the present study the labour force who are not able to run above mentioned machine. They do other kind of work like piling of logs, carrying of wooden clefts etc.

iii) White Collar Workers: The workers who earn salary are known as white collar workers. In the present study the white collar workers who find a mention in the survey are- managers and record keepers.

B) Capital: Refers to man-made material resource used or available for use in production. The capital, as already pointed out, comprises fixed capital and variable capital. Fixed capital which find a mention in the survey are machinery, buildings etc. Similarly, variable capital is raw material like willow, popular etc.

2.4. Depreciation: Loss of value of capital goods due to wear and tear (fixed capital consumed in the process of production). In the present study depreciation is estimated by dividing the present market value of machines used in the cricket bat manufacturing industry by their expected life.

2.5. Repair and Maintenance Cost: The costs of repair and maintenance of the cricket bat manufacturing industry has been calculated on the basis of actual cost incurred in monetary terms on their repair and maintenance.

2.6. Investment: Investment refers to building up of productive capacity required to produce goods and services for current and to some extent, for future consumption. This is done in terms of acquiring machines, erection of plants and buildings, buying of raw material, making arrangements of man power needed and so on. The expenditure incurred on all such items is called investment.

2.7. Other terms used

2.7.1. Gross Returns: Gross returns are the value of the industrial output included by products. In the present study it is obtained by multiplying the quantity of output produced by their price.

$$\text{Gross Returns} = \text{Quantity of output} \times \text{Price.}$$

2.7.2. Net Returns: Net Returns in the present study are obtained by subtracting gross returns from total production cost.

$$\text{Net returns} = \text{Gross Returns} - \text{Total production cost.}$$

2.7.3. Returns per rupee of investment (productivity): It is the ratio of what comes out of a business (returns) to what goes into the business (costs). Returns per rupee of investment have been calculated in terms of gross and net ratios. Gross return per rupee of investment is the ratio of gross returns to the total cost ($\frac{GR}{TC}$), while as net returns per rupee of investment is the ratio of net returns to total cost ($\frac{NR}{TC}$).

2.7.4. Returns to Scale: In the long run, all factors of production became variable, no factor remains fixed. In this period, production of a commodity can be increased by increasing all the factors in same proportion. If all factors are increased in the same proportion, the scale of production increases, and the corresponding behaviour of output is studied as returns to scale.

2.7.5. Economies of Scale: Economies of scale refer to the situation in which increasing the scale of production, reduces the unit cost of production or raises output per unit of the factor input.

Increasing Returns to Scale: Increasing returns to scale occur when given percentage increase in all factor inputs (in some constant ratio) cause proportionately greater increase in output.

Constant Returns to Scale: Constant returns to scale occur when given percentage increase in all factor inputs (in some constant ratio) causes equal percentage increase in output.

Decreasing Returns to Scale: - Decreasing returns to scale occur when a given percentage increase in all factor inputs (in some constant ratio) causes proportionately lesser increase in output.

2.8. Methodology and Data Base

To analyse the status and viability of wood base industry in district Anantnag- with special reference to cricket bat industry, the data was obtained from both primary and secondary sources. Since the data from secondary sources was not adequate, the same was supplemented by primary data, which was collected by means of open-end questionnaire, which was framed strictly in accordance with the objectives and hypotheses of the study. Selection of sample was based on the information collected from District Industries Centre Anantnag (DIC). The data collected from DIC, revealed that there were 195 cricket bat manufacturing units registered with the DIC Anantnag, falling mostly in Tehsil Bijbehara. To conduct the field study a random sample approximately of about 20 percent (40 units) was taken from a total of 195 units.

The analysis of the data for empirical estimation has been done in the context of size of investment. For this purpose, the industrial unit holders have been categorised, as per convenience into three classes viz, small industrial unit holders with investment less than Rs 20 lacs, medium industrial unit holders with investment between Rs 20-40 lacs and large industrial unit holders with investment more than Rs 40 lacs. The reference period for the present study has been the year 2010-11.

Information was collected through various methods such as administering the questionnaire and interviews. A comprehensive schedule especially designed for collection of data was administered to these randomly selected respondents. The survey of the sampled units was conducted to get information regarding production of cricket bats, structure of inputs and returns from the industry to evaluate their profitability and viability. Personal profile of respondents was prepared, in which their name, address, age, education level, their experience and area under industry were noted. The respondents were asked questions related to use of inputs, production on marketing of cricket bats etc.

The secondary data has been obtained from the following sources:

- i. Official records of District Industries Centre Anantnag.
- ii. Official records of Department of Commercial and Sales Tax Anantnag.
- iii. Digest of Statistics (2008-2009), Directorate of Economics and Statistics, Planning and Development Department, Government of Jammu and Kashmir.
- iv. Economic Survey (2010-2011), Directorate of Economics and Statistics, Planning and Development Department, Government of Jammu and Kashmir.
- v. Performance Review of J & K Economy (2008-2009), Directorate of Economics and Statistics, Planning and Development Department Government of Jammu and Kashmir.
- vi. Directorate of Industries and Commerce, Government of Jammu and Kashmir, Srinagar.

After collecting primary data from Cricket bat manufacturing enterprises and secondary data from various published and unpublished official sources, the data was classified and tabulated for making the further analysis and interpretation. The study is descriptive and analytical and utmost care has been taken while analysing and interpreting the various variables to arrive at the

logical conclusion. Various statistical and mathematical tools like growth rate, percentages, arithmetic mean, correlation, regression etc have been used, to ascertain the growth trend, production costs incurred and returns of bat industry. A description of statistical methods used during the empirical analysis of the data is given below.

2.9. Cost and Return Analysis

To find out the profitability of cricket bat industry, following technique was used:

$$GR = Q \times P: \quad NP = GR - TPC:$$

$$TPC = TFC + TVC : \quad GM = GR - TVC: \quad NPM = \frac{GM}{TR} \times 100$$

Where GR = Gross Revenue, Q = Quantity of Output, P = Price per Unit of Output NP = Net Profit, TPC = Total Production Cost, TFC = Total Fixed Cost, TVC = Total Variable Cost, GM = Gross Margin and NPM = Net Profit Margin.

Growth Rate

To work out growth rate of cricket bat manufacturing industry in terms of number of units, employment, sales etc following formula has been used;

$$\text{Growth rate} = \frac{Q_t - Q_{t-1}}{Q_{t-1}} \times 100$$

Where Q_t = Quantity in current period;

Q_{t-1} = Quantity in previous period.

Regression Analysis

To know the effect of variables like labour and capital on output following formula has been used;

$$Y = a + bx$$

Y = Output

x = input

a = Intercept

b = unknown parameter to be calculated statistically.

Correlation

Karl Pearson's coefficient of correlation has been used to work out the relation between the following variables;

- i. Number of units and employment.
- ii. Production and employment.

Following formula has been used to calculate coefficient of correlation:

$$r = \frac{\sum xy}{\sqrt{\sum x^2 \times \sum y^2}}$$

r = Karl Pearson's coefficient of correlation.

$$x = (x - \bar{x})$$

$$y = (y - \bar{y})$$

Cobb Douglas production function;

The general form of Cobb-Douglas production function is:

$$Q = AL^\alpha K^\beta$$

Where Q = Output; L = Labour input; K = Capital input; α and β are labour and capital elasticity

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Chapter - 3

Status of Wood Based Industry in District Anantnag

The state of Jammu and Kashmir is a core of good mineral base, substantial water resources and is famous world over in its handicrafts, tourism, cottage industries and wood based industries. The Valley offers a distinct free environment which is perfect for the development of industrial units. Many small and cottage industries have come up basically in the traditional sector along with some new areas like food processing, agro based units and wood based units. A total number of units of the order of 25694 SSI units are functioning in the state providing employment opportunities to 110178 persons up to ending Nov.2010. The total investment in these units is Rs 3016 crore. The increase in investment from reference year 2001 has registered a growth of 69% and in employment generation 54%.

Industrial development remains a thrust area in the state Government's agenda. Government's endeavor is to provide efficient cost effective infrastructure. Dispersal of industries to the under developed areas in which state through creation of necessary infrastructure and providing financial/fiscal incentives is focused. To usher in new era of industrialization, Government has come up with a new and comprehensive industrial policy which came into being in 2004 and will last till 2015 under which planned incentives are being taken to raise Jammu and Kashmir which is predominantly known as consumer state for most of its requirements to a level of self sufficiency and in the near future to a producer state. The policy has a slew of incentives in the form of subsidies for all sorts of industries particularly for small scale to make them capable to compete in the present competitive environment.

For speedy growth of small scale industrial sector in the state, the Government has brought about simplification in the registration procedure. One District Industries Centre has been set up in each district of the state. The

primary objective of these centers is to provide all services to the entrepreneurs under one roof. Anantnag district is one such district where the state Government has set up industries centre. The industries centre serves as a nodal agency in the district. It provides all the services to the entrepreneurs. It is the district which is situated in south and south western direction, 55 kms from Srinagar. The district is not only rice bowl of the valley, but is also rich in many cottage and small industries especially wood based industry.

3.1. WOOD BASED INDUSTRY

The industry that utilizes various types of woods such as willow, popular, mulberry, walnut etc for its raw material is known as wood based industry. It is that industry which carries out mechanical and chemical treatments and processing of timber. It is the industry which produces sawn woods, ply woods, matches, furniture, sports goods etc. However, in this chapter we have confined our analysis to some major activities including shook manufacturing industry, furniture manufacturing industry, plywood industry and cricket bat manufacturing industry.

3.2. Status of Shook Manufacturing Industry in District Anantnag

The industry that utilizes various woods such as willow, popular etc for its raw material and cuts the logs of willow and popular into small pieces and then make boxes from these pieces (apple boxes) known as shook industry. According to data compiled from District Industries Centre (DIC) Anantnag, the total number of functional shook manufacturing units were 40 providing employment to 135 persons with an annual turnover of about Rs 80 lacs. On an average 3 persons are employed in each manufacturing unit. Features of these shook manufacturing units are shown below:

3.2.1. Number of units and employment (shook industry)

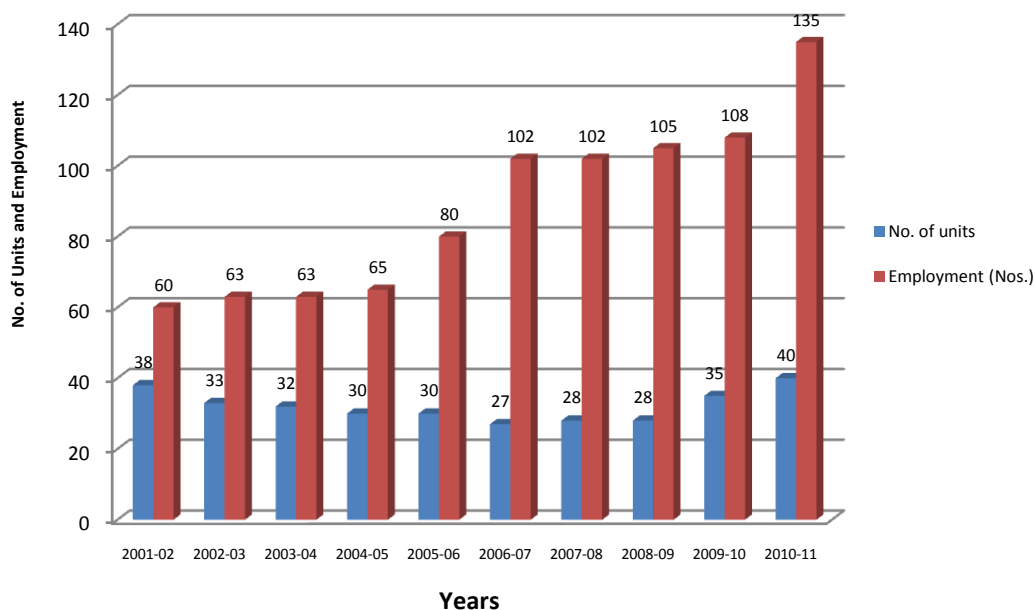
Table 3.1: Number of units and employment (shook industry)

Year	No. of units	Employment (Nos.)	Year to year growth rate	
			No. of units	Employment
2001-02	38	60	-	-
2002-03	33	63	-13.16	5.00
2003-04	32	63	-3.12	0.00
2004-05	30	65	-6.66	3.17
2005-06	30	80	0.00	23.07
2006-07	27	102	-11.11	27.5
2007-08	28	102	3.70	0.00
2008-09	28	105	0.00	2.94
2009-10	35	108	25.00	2.85
2010-11	40	135	14.28	25.00

Source: Compiled from official records of DIC and Department of Sales Tax

Anantnag.

Figure 3.1: Number of units and employment (shook industry)



It is clear from the above table and figure 3.1 that Shook manufacturing industry in District Anantnag forms an important part of economic life of the

people and provides employment to nearly hundreds of people in the district. In 2001-02 there were only 38 Shook manufacturing units, providing employment to 60 persons. With the increase in the production of apples in the District, the number of shook manufacturing units has increased to 40 in 2010-11, providing employment opportunities to 135 persons. It is also evident from the above table that formal registration of shook manufacturing units in the district Anantnag has registered 14.28% growth during the year 2010-11 as against - 13.16% in 2002-03. Similarly employment has also registered a growth of 25% in comparison to 5% in 2002-03.

3.2.2. Production and sales of shooks in District Anantnag

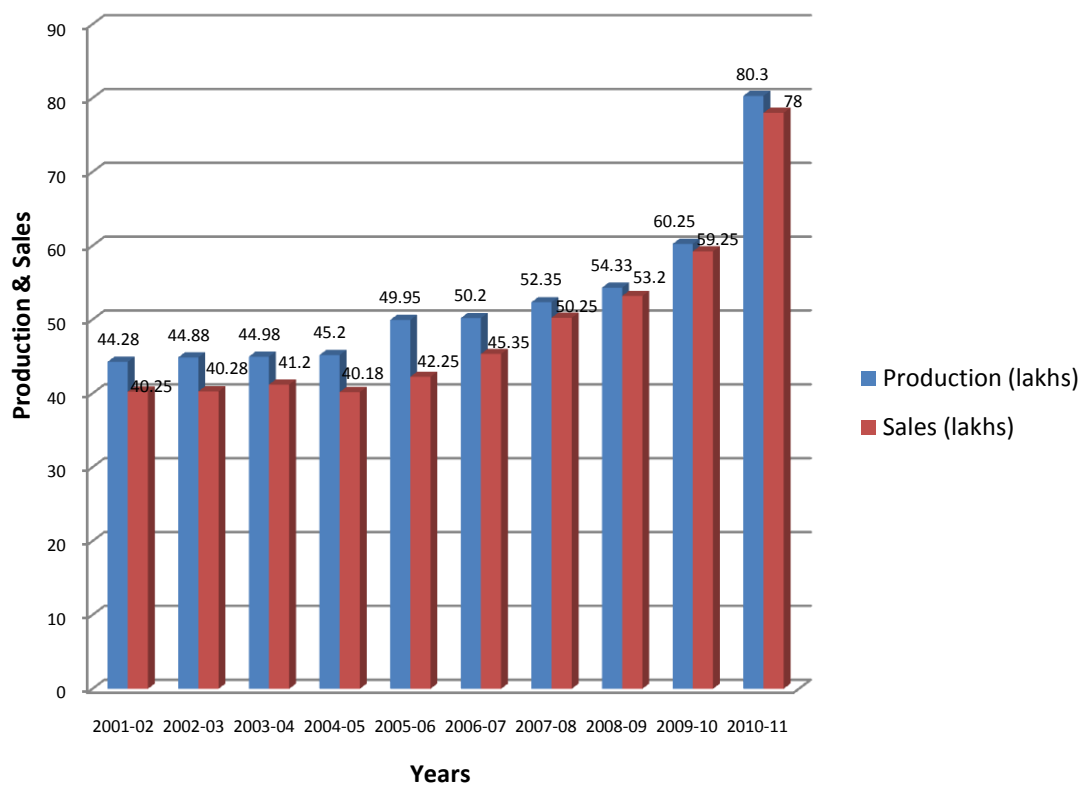
Table 3.2: Production and sales (shook industry)

Year	Production (lacs)	Sales (lacs)	Year to year growth rate	
			Production	Sales
2001-02	44.28	40.25	-	-
2002-03	44.88	40.28	1.35	0.07
2003-04	44.98	41.20	0.22	2.28
2004-05	45.20	40.18	0.48	-2.47
2005-06	49.95	42.25	10.50	5.15
2006-07	50.20	45.35	0.50	7.33
2007-08	52.35	50.25	4.28	10.80
2008-09	54.33	53.20	3.78	5.87
2009-10	60.25	59.25	10.89	11.37
2010-11	80.30	78.00	33.27	31.64

Source: Compiled from official records of DIC and Department of Sales Tax

Anantnag

Figure 3.2: Production and Sales (Shook Industry)



It is clear from the table and figure 3.2 that the production as well as sales of shook manufacturing industry has increased. In 2010- 11, the production and sales of shooks was Rs 80.30 and Rs 78.00 lacs respectively, while as corresponding to previous year the figures with regard to production and sales was only Rs 60.25 lacs and 59.25 lacs respectively. The above table also shows that the production as well sales has shown improvement in terms of growth rates in 2010-11 i.e. production has registered 33.27% growth rate as against 10.89% in the corresponding year and sales has registered 31.64% growth rate as against 11.64% in the corresponding year. Comparing the performance of shook industry as against period 2001-02, it can be observed that the industry has witnessed almost 100 percent growth in terms of production and sales.

3.3. Status of Furniture Manufacturing Industry in District Anantnag

The Furniture industry is an important branch of wood processing industry. Many people in district Anantnag are engaged in this industrial activity. The industry is their source of income. As the demand for readymade furniture such as doors, windows, kitchen furniture, bed room furniture, arm chairs, other wood products used in schools, offices etc has increased, more and more furniture units were established. To utilize the large resources of both soft and hard wood, a number of units have been established. In recent past, many units were set up to manufacture furniture in some villages such as Nipora, Wanpo, Harnag, Bijbehara of District Anantnag. The status of furniture industry in District Anantnag is shown in table 3.3.

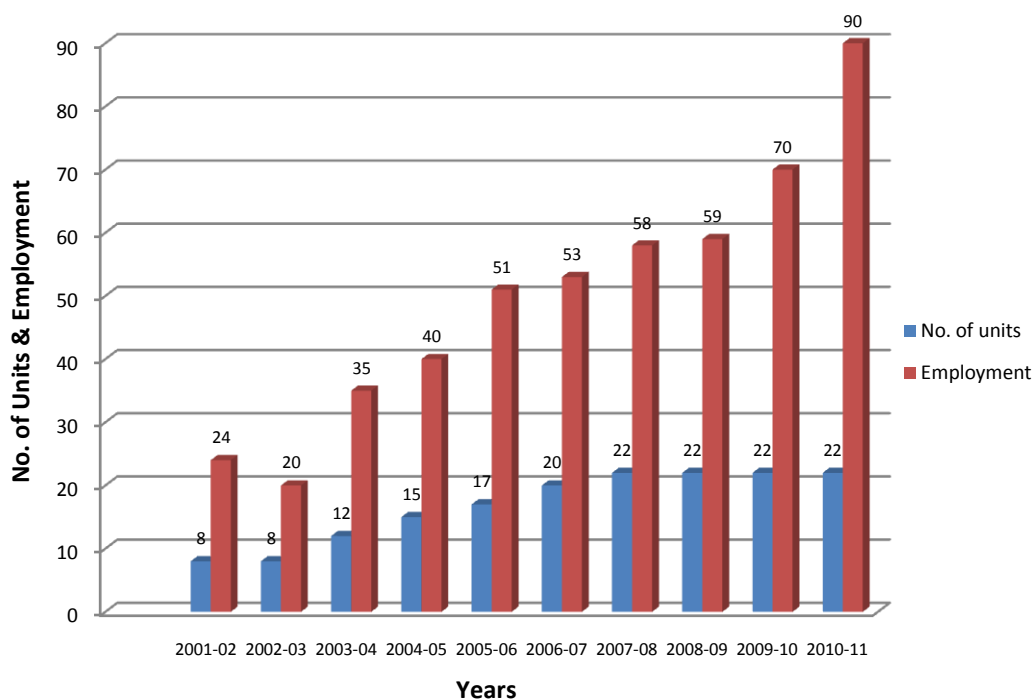
3.3.1. Number of units and employment (furniture industry)

Table 3.3: Number of units and employment (furniture industry)

Year	No. of units	Employment (Nos.)	Year to year growth rate	
			No. of units	Employment
2001-02	8	24	-	-
2002-03	8	20	0.00	-16.66
2003-04	12	35	50.00	75.00
2004-05	15	40	25.00	14.28
2005-06	17	51	13.33	27.5
2006-07	20	53	17.64	3.92
2007-08	22	58	10.00	9.43
2008-09	22	59	0.00	1.72
2009-10	22	70	0.00	18.6
2010-11	22	90	0.00	28.5

Source:- Compiled from official records of DIC and Department of Sales Tax Anantnag

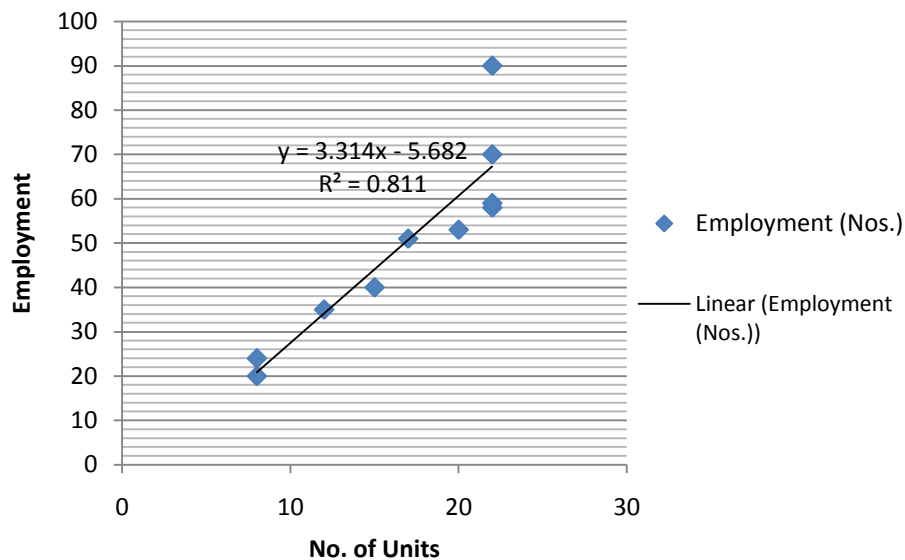
Figure 3.3: Number of Units and Employment



The table and figure 3.3 shows that in 2001-2002 there were only 8 furniture manufacturing units in district Anantnag, providing employment opportunities to 24 persons. During the course of time the industry has grown rapidly. In 2010-11 the number of units has increased to 22, providing employment opportunities to 90 persons. The formal registration of units has registered constant growth from 2008-09 onwards while in case of employment the industry registered 28.5% growth in terms of employment. By employing correlation and regression analysis on number of units and employment, following results are obtained following results were obtained;

The Correlation between number of units and employment is 0.90, shows that there is positive relation between these variables. Regression equation i.e. $Y = -5.68 + 3.31x$ indicates that when number of units are increased by 1, employment is increased by 3 persons, as shown below;

Figure 3.4: Number of units and employment (linear trend)



The above figure shows the relation between level of employment and number of units, as the number of units increases, the level of employment also increases as is clear from the increasing trend line during the period of 2001-02 to 2010-11. The value of coefficient of determination calculated between number of units and employment $R^2 = 0.81$, which shows that there is highly increase in level of employment with the increase in number of units during reference period.

3.3.2. Production and sales of furniture industry in District Anantnag

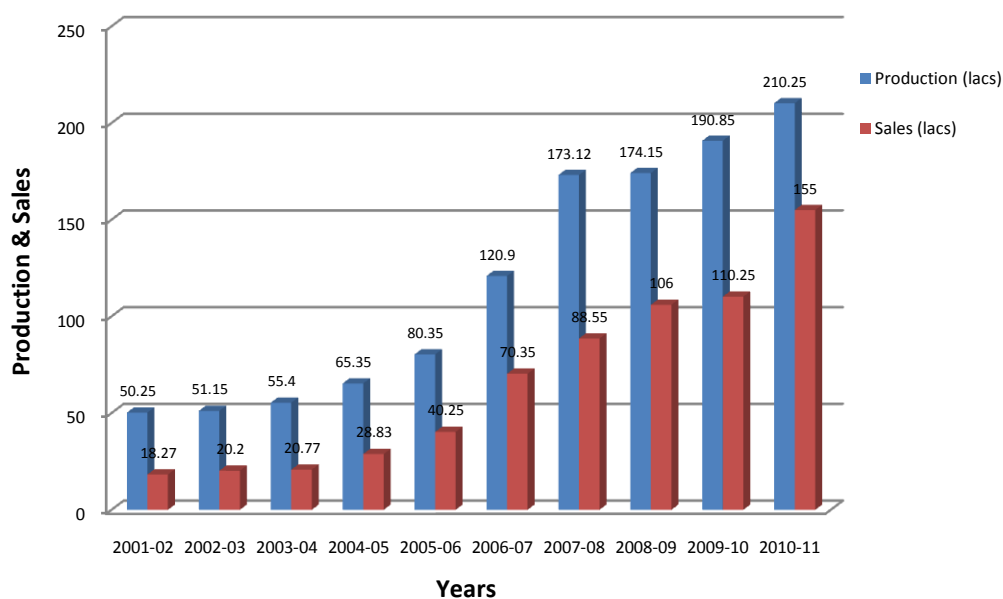
Table 3.4: Production and Sales (Furniture Industry)

Year	Production (lacs)	Sales (lacs)	Year to year growth rate	
			production	Sales
2001-02	50.25	18.27	-	-
2002-03	51.15	20.20	1.99	10.56
2003-04	55.40	20.77	8.09	2.82
2004-05	65.35	28.83	12.96	38.80
2005-06	80.35	40.25	22.95	39.61
2006-07	120.90	70.35	50.46	74.78
2007-08	173.12	88.55	43.19	25.87
2008-09	174.15	106.00	0.59	19.70
2009-10	190.85	110.25	9.58	4.00
2010-11	210.25	155.00	10.16	40.58

Source: Compiled from official records of DIC and Department of Sales Tax

Anantnag

Figure 3.5: Production and Sales (Furniture Industry)



The above table 3.4 and figure 3.5 gives the clear picture of furniture industry in terms of production and sales in district anantnag. In 2001-2002 there were only 8 furniture manufacturing units in district Anantnag, producing the furniture worth Rs50.25 lacs. In 2010-11 the production has increased to Rs 210.25 lacs and sales have increased to Rs 155.00 lacs. The growth of Furniture manufacturing industry shown in the above table reveals that there has been phenomenal growth in the production and sales. As is clear from the table 3.4, a significant growth has been registered in production and sales of furniture industry in district Anantnag. In 2010-11 production has registered 10.16 % growth rate as against 9.58% in the corresponding year and sales has registered 40.58 % growth rate in 2010-11 as against 4.00% in the corresponding year. Comparing the performance of furniture industry as against period 2001-02, it can be observed that this industry has witnessed four times increase in production and sales.

3.4. Status of Ply Wood Industry in District Anantnag

The history of plywood industry in India is old. It is more than 75 years that this industry was started here on a very modest scale. It was in a year 1906-07 that ply wood was imported in India¹. Due to the increase in demand for veneer sheets, plywood in the state of J&K, the industry was also started in the state. More and more people in Kashmir division especially in District Anantnag established their units. Some villages in the district where the units of ply wood were established are Harnag, Wanpow, Nipora and Qazigund. The status of this industry in district Anantnag is explained below.

¹ www.scribd.com/doc/plywoodindustry

3.4.1. Number of units and employment

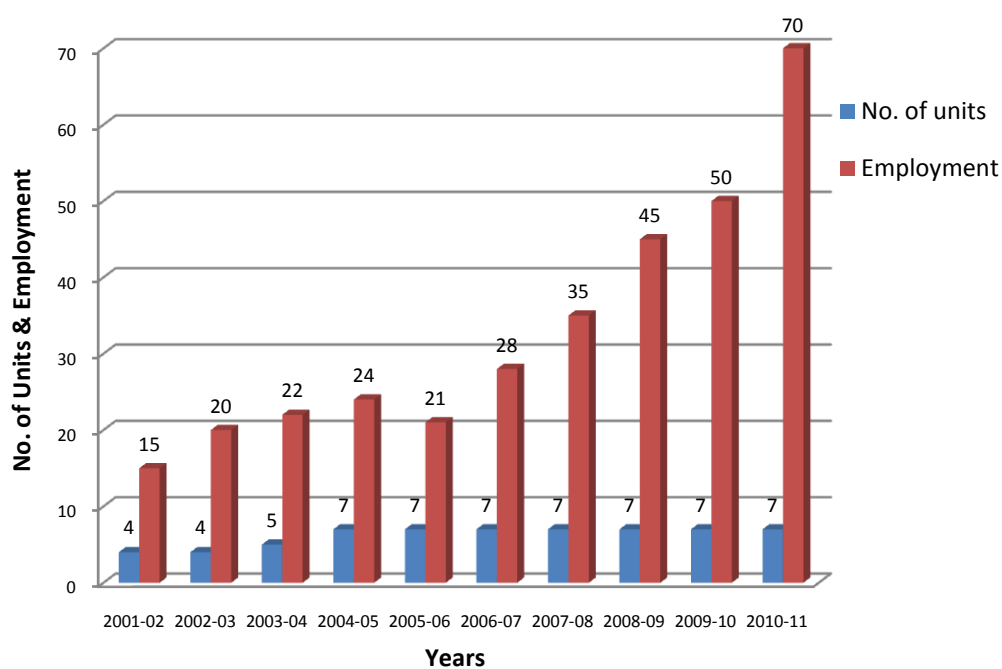
Table 3.5: Number of units and employment (ply wood industry)

Year	No. of units	Employment (Nos.)	Year to year growth rate	
			No. of units	Employment
2001-02	4	15	-	-
2002-03	4	20	0.00	33.33
2003-04	5	22	25.00	10.00
2004-05	7	24	40.00	9.09
2005-06	7	21	0.00	-12.5
2006-07	7	28	0.00	33.33
2007-08	7	35	0.00	25.00
2008-09	7	45	0.00	28.57
2009-10	7	50	0.00	11.11
2010-11	7	70	0.00	40.00

Source: Compiled from official records of DIC and Department of Sales Tax

Anantnag

Figure 3.6: Number of Units and Employment



It is evident from the above table and figure, that number of units and employment has shown a little improvement. In 2001-2002 there were 4 units of ply wood industry in district Anantnag, providing employment opportunities to only 15 persons. During the course of time the industry has grown slowly. In 2006-2007 the number of units has increased to 7, providing employment to 28 persons. In 2010-11 the number of units has remained same, but employment has increased to 70 persons. The growth of Plywood industry as shown in the table 3.5 reveals that there has been not a phenomenal growth in number of units and employment. The formal registration of units has registered a constant growth from 2004-05 onwards. The employment has registered a growth of 40.00% in comparison to 11.11% in 2009-10.

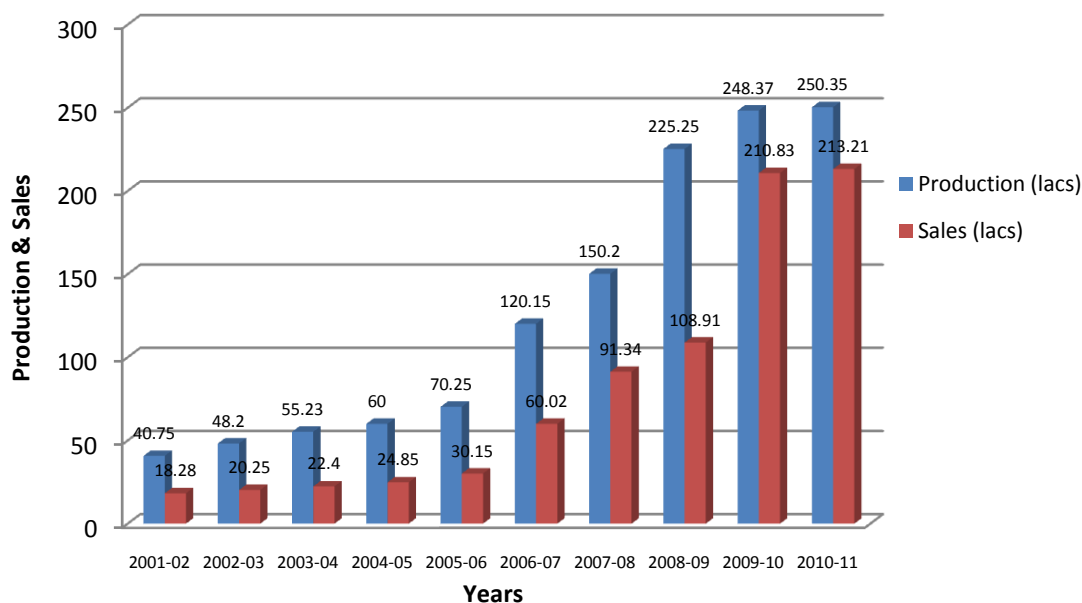
3.4.2. Production and sale of ply wood industry

Table 3.6: Production and Sales (Ply wood Industry)

Year	Production (lacs)	Sales (lacs)	Year to year growth rate	
			Production	Sales
2001-02	40.75	18.28	-	-
2002-03	48.20	20.25	18.28	10.77
2003-04	55.23	22.40	14.58	10.61
2004-05	60.00	24.85	8.63	10.93
2005-06	70.25	30.15	17.08	21.32
2006-07	120.15	60.02	71.03	99.07
2007-08	150.20	91.34	25.01	52.18
2008-09	225.25	108.91	49.96	98.06
2009-10	248.37	210.83	10.26	16.53
2010-11	250.35	213.21	0.79	1.12

Source: Compiled from official records of DIC and Department of Sales Tax Anantnag

Figure 3.7: Production and Sales (Ply wood Industry)



The above table and figure gives the clear picture of plywood industry in terms of production and sales in district Anantnag. In 2001-2002 there were only 4 plywood manufacturing units in district Anantnag, producing plywood worth Rs 40.75 lacs. In 2010-11 the production has increased to Rs 250.35 lacs and sales have increased to Rs 213.21 lacs. As is clear from the table 3.6, a significant growth has been registered in production and sales of plywood industry in district Anantnag. Comparing the performance of furniture industry as against period 2001-02, it can be observed that this industry has witnessed five times increase in production and sales. .

3.5. Status of Cricket Bat Industry (CBI) in District Anantnag

One of the most important SSI units in district Anantnag is cricket bat manufacturing industry. The origin of this industry in Kashmir is supposed to be from Sialkot Pakistan. The technical know-how was imported from England. This trade flourished in those areas of Kashmir where raw material was substantially available. Those persons who at that time were financially sound established their units at Halmullah in tehsil Bijbehara of District

Anantnag. More and more people especially at Halmullah, Sangam, Sethar, Bijbehara, Marhama in district Anantnag got attracted towards this trade and established their units during the initial years. The CBI has impressive reputation of making cricket bats which are exported to outside. It is important to mention here that during the course of more than one century of making bats, Kashmir valley particularly District Anantnag has gained a name and fame. In 1975 to 1980 there were only 25 units of cricket bats in Anantnag and Pulwama of Kashmir division. It has grown to 273 units by the end of March 2009 in which district Anantnag alone has 195 units. The performance of cricket bat manufacturing industry is shown as below.

3.5.1. Number of units and employment (CBI)

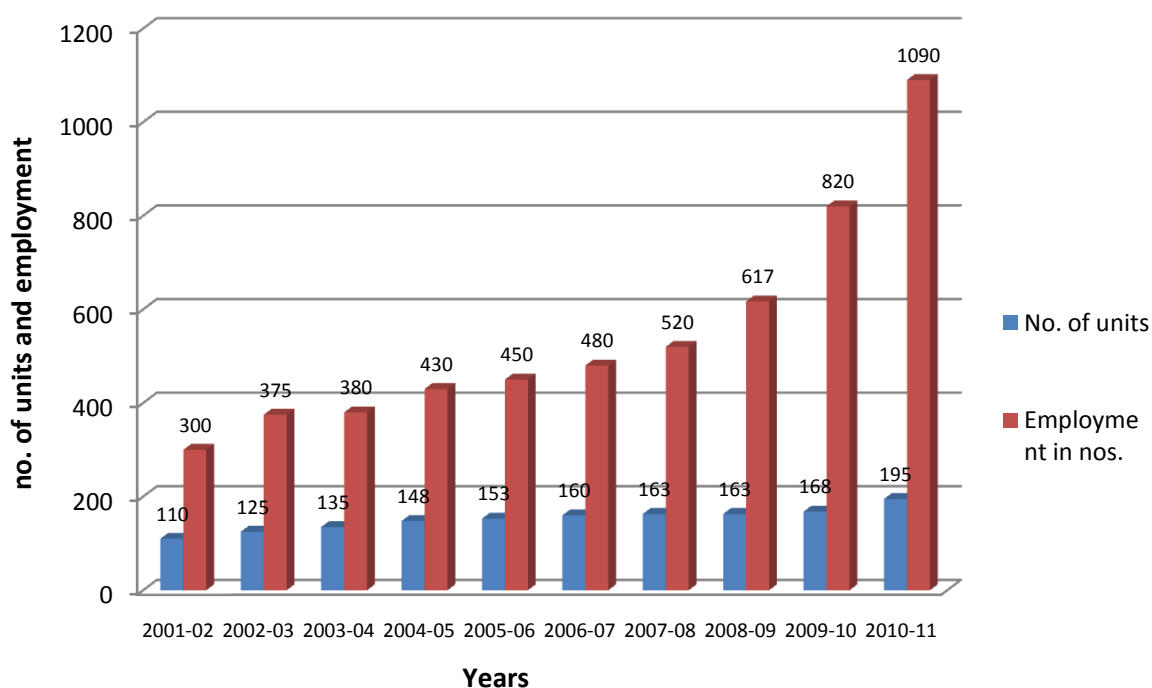
Table 3.7: No. of units and employment

Year	No. of units	Employment in nos.	Year to year growth rate	
			No. of units	Employment in nos.
2001-02	110	300	-	-
2002-03	125	375	13.64	25
2003-04	135	380	8	1.33
2004-05	148	430	9.63	13.15
2005-06	153	450	3.38	4.65
2006-07	160	480	4.58	6.66
2007-08	163	520	1.87	8.33
2008-09	163	617	0.00	18.65
2009-10	168	820	3.07	32.40
2010-11	195	1090	16.07	32.92

Source: Compiled from official records of DIC and Department of Sales Tax

Anantnag

Figure 3.8: No. of bat manufacturing units and employment

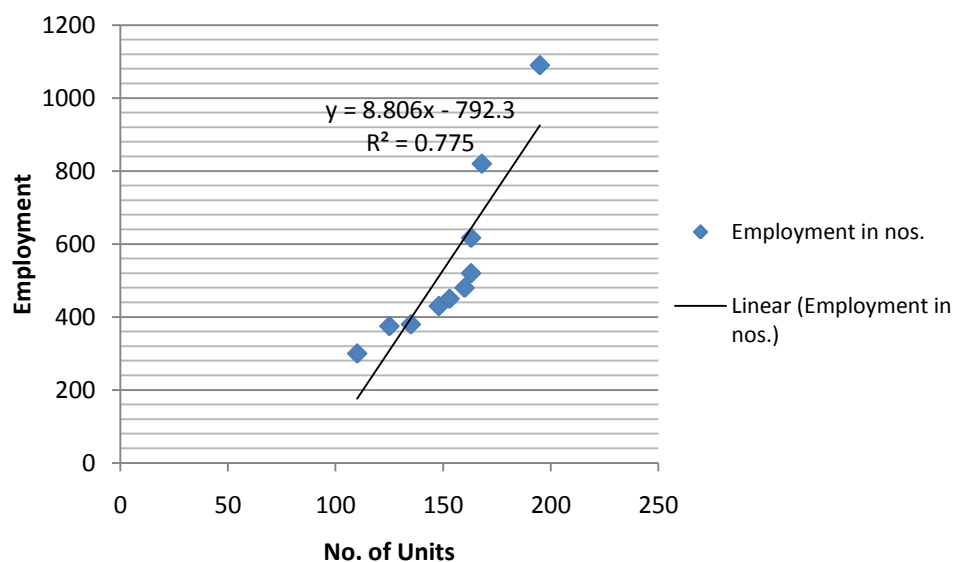


The perusal of the above table and figure gives the clear picture of the growth of cricket bat industry in terms of number of units and employment generation. In 2001-2002, there were only 110 units of cricket bat manufacturing units in district Anantnag, providing employment opportunities to 300 persons. During the course of time the industry has grown rapidly. In 2006-2007 the number of units has increased to 160, providing employment to 480 persons. The formal registration of units has registered 16.07% growth during the year 2010-11 as against 3.07% in the corresponding year and employment has also registered a growth of 32.92% in comparison to 32.40% in 2009-10. The numbers of villages such as Kandipora, Thajwara, Samthan, Punjpora etc in tehsil Bijbehara have established cricket bat manufacturing units recently. After 2009, the industry registered sharp growth rate in number of units and employment due increase in demand for cricket bats, expansion of infrastructure facilities, increasing popularity of cricket, higher spending on physical education, cricket world cup 2011 etc. By employing regression and

correlation analysis on the number of units and employment the following results were obtained.

Regression equation $y = 8.806x - 792.3$, where $Y =$ employment and $X =$ number of units, shows that when numbers of cricket bat manufacturing units are increasing by 1, on an average, employment is increased by 8 persons, as shown below in figure 3.11 The correlation between number of units and employment is positive i.e. 0.88, indicates that there is fairly a strong positive relation between these variables.

Figure 3.9: Number of units and employment (linear trend)



The above figure shows the relation between level of employment and number of units, as the number of units increases, the level of employment also increases as is clear from the increasing trend line during the period of 2001-02 to 2010-11. The value of coefficient of determination calculated between number of units and employment $R^2 = 0.77$, which shows that there is highly increase in level of employment with the increase in number of units during reference period.

3.5.2. Production and sales of cricket bats

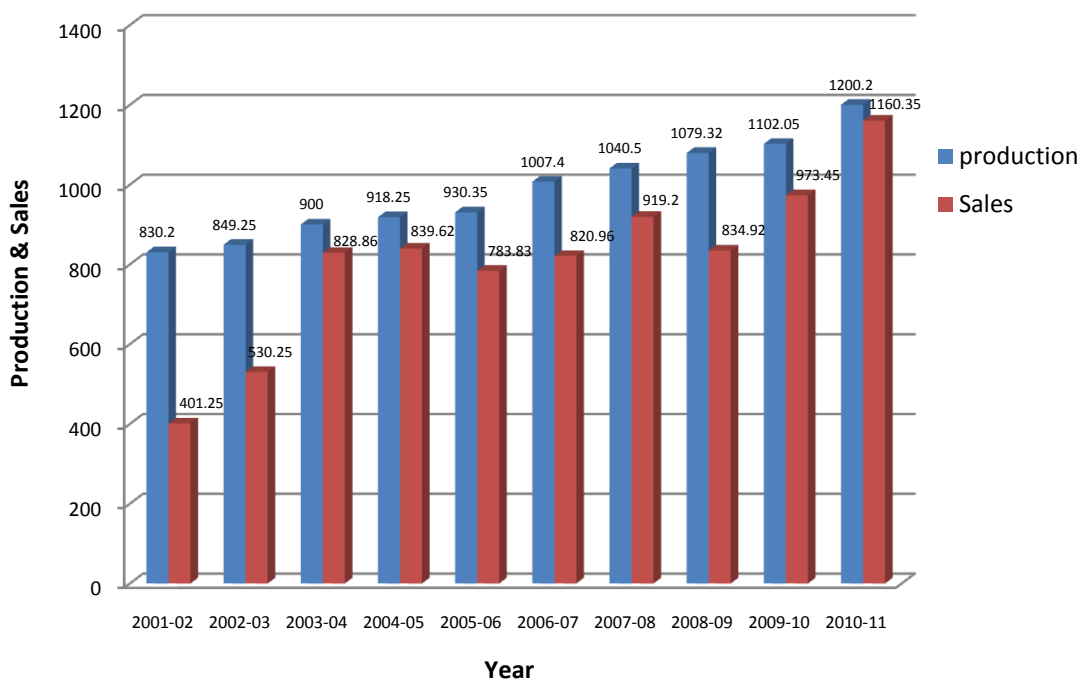
Table 3.8: Production and sales of cricket bats

Year	Production (Rs lacs)	Sales (Rs lacs)	Year to year growth rate	
			Production	Sales
2001-02	830.20	401.25	-	-
2002-03	849.25	530.25	2.30	32.14
2003-04	900.00	828.86	5.98	56.31
2004-05	918.25	839.62	2.02	1.30
2005-06	930.35	783.83	1.32	-6.64
2006-07	1007.40	820.96	8.28	4.74
2007-08	1040.50	919.20	3.28	11.97
2008-09	1079.32	834.92	3.73	-9.16
2009-10	1102.05	973.45	2.10	16.59
2010-11	1200.20	1160.35	8.90	19.19

Source: Compiled from official records of DIC and Department of Sales Tax

Anantnag

Figure 3.10: Production and Sales of Cricket Bats



The above table and figure depicts that production and sales of cricket bats in district Anantnag has also shown an improvement. In 2001-2002 there were

only 110 units of cricket bat manufacturing units in district Anantnag, producing the cricket bats worth Rs 830.20 and the sale of cricket bats in this period was Rs 401.25 lacs. In 2010-11, the production as well as sales of cricket bat has increased in the district i.e. production has increased to Rs 1200.20 lacs and sales has increased to Rs 1160.35 lacs, registering 8.90% growth rate as against 2.10% in the corresponding year and sales has registered 19.19% growth rate in 2010-11 as against 16.59% in the corresponding year.

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Chapter -4

Manufacturing and Marketing of Cricket Bats

The cricket bat is consisting of two parts, the Cleft and the Handle. The cleft part is used to hit the ball where as handle is used to hold the bat. Willow wood is used to make cleft part where as cane is used to make handle. Clefts can be made from willow and popular, which are grown in Kashmir. Cane is brought from Assam, Karnataka, Goa and Andaman and Nicobar Islands and is also imported from Malaysia.

4.1. Cricket bat willow

Kashmir willow is mainly used with leather balls because of its strength and lightness. Popular wood based bats are used to ply with rubber/plastic tennis balls because of having low strength. Cricket bat willow trees are grown in Kashmir. Right from the saffron fields of Pampore up to Sangam bridge, the Jammu- Srinagar highway is dotted with shops selling willow bats. Heaps of willow clefts kept for seasoning on rooftops or in open on roadside can be seen on this highway. This area is known as bat hub of Kashmir valley. Kashmir Willow is known around the world as second only to the famous English willow grown mostly in Essex and Thames valley (England). Willow was introduced in Kashmir as a fast growing source of wood for fuel, packaging and wickerwork by the British in 1927. Cricket bat industry of Jalandhar in Punjab is also dependent on Kashmir willow clefts. Cricket bat willow trees are grown in Kashmir, when the tree attains the age of 15-20 years and the girth of 34 inches (trunks), the willow is ready for harvesting. After cutting the willow tree, the trunks are cut into sections using handsaw as shown below:



The willow cut sections or rolls are carried out from the field on men shoulders and are loaded into trucks, and carried to bat manufacturing units for the process of bat manufacturing.

4.2. Manufacturing process

In the process of bat manufacturing, the following steps are involved:

4.2.1. Sawing

The first step involved in the bat making process is sawing, under which round willow logs of wood are sawn through electrically runned saw (Band saw) into pieces called clefts as shown below:



4.2.2. Grading

After sawing, grading of clefts is done on their straightness of their grains, number of grains, colouration and knots. The best clefts have straight grains. Grade two and three has soft wood and red wood respectively having some knots.



4.2.3. Seasoning

Seasoning is the process of drying clefts for reducing moisture content. The process of seasoning enhances the basic characteristic properties of clefts as it increases stiffness, bending strength and compression strength. For seasoning of clefts two techniques are involved i) open air seasoning and ii) modern kiln seasoning. In the former seasoning is done under natural heat of the sun and in the later process clefts are dried

artificially by circulating hot air at desired temperature and moisture content.



4.2.4. Cleft preparation (machining)

When the seasoning of clefts is complete, they undergo various machining processes to form basic blade of cricket bat.



4.2.5. Pressing process

Once the blade is graded and machined, the next stage is the pressing. During the pressing process the face of the blade is subject to immense pressure with the top fibres of the face being compacted by the rollers. Too little pressing will cause the blade to underperform and crack easily and too much pressure will make the bat too hard and unable to spring when striking the ball. The pressing process gives the face of the cleft a case hardening to withstand the force of striking a ball.



4.2.6. Fitting the handle

After pressing process, handle is spliced into a blade. Splicing is where the handle and cleft are joined together in a joint. Once the joint is ready the handle joint is glued and fixed and set into the cleft, then left for 24 hours to set.



4.2.7. Hand shaping:

An important process which is unique to each bat is tested for balance. In this process, after fixing the handle, the blade is shaped by pulling off the wood with the help of hand plane or draw knife. Bat making is not engineering, it is skilled craft.



4.2.8. Sanding:

After hand shaping, the bat is sanded on sander and then fine sanded. Like the shaping, the sanding is dependent upon the eye and skill of the craftsman.



4.2.9. Binding and polishing:

In this process of bat manufacturing, the bat handle is bound with string, brushed with glue and whipped with thread. The blade is then finally burnished using required polish.



4.2.10. Finishing (Rubber grip application and labelling)

With the help of handle grip cone, the rubber grips are rolled down, followed by labelling the stickers, skin packing and polytheneing to give the bat an extra protection.



4.3. Characteristics of cricket bat

Bat speed

It is the speed at which the bat travels to hit the ball. Generally, the faster the bat speed, the more likely the batsman is to hit the ball with the middle of the bat. The following factors influence the bat speed:

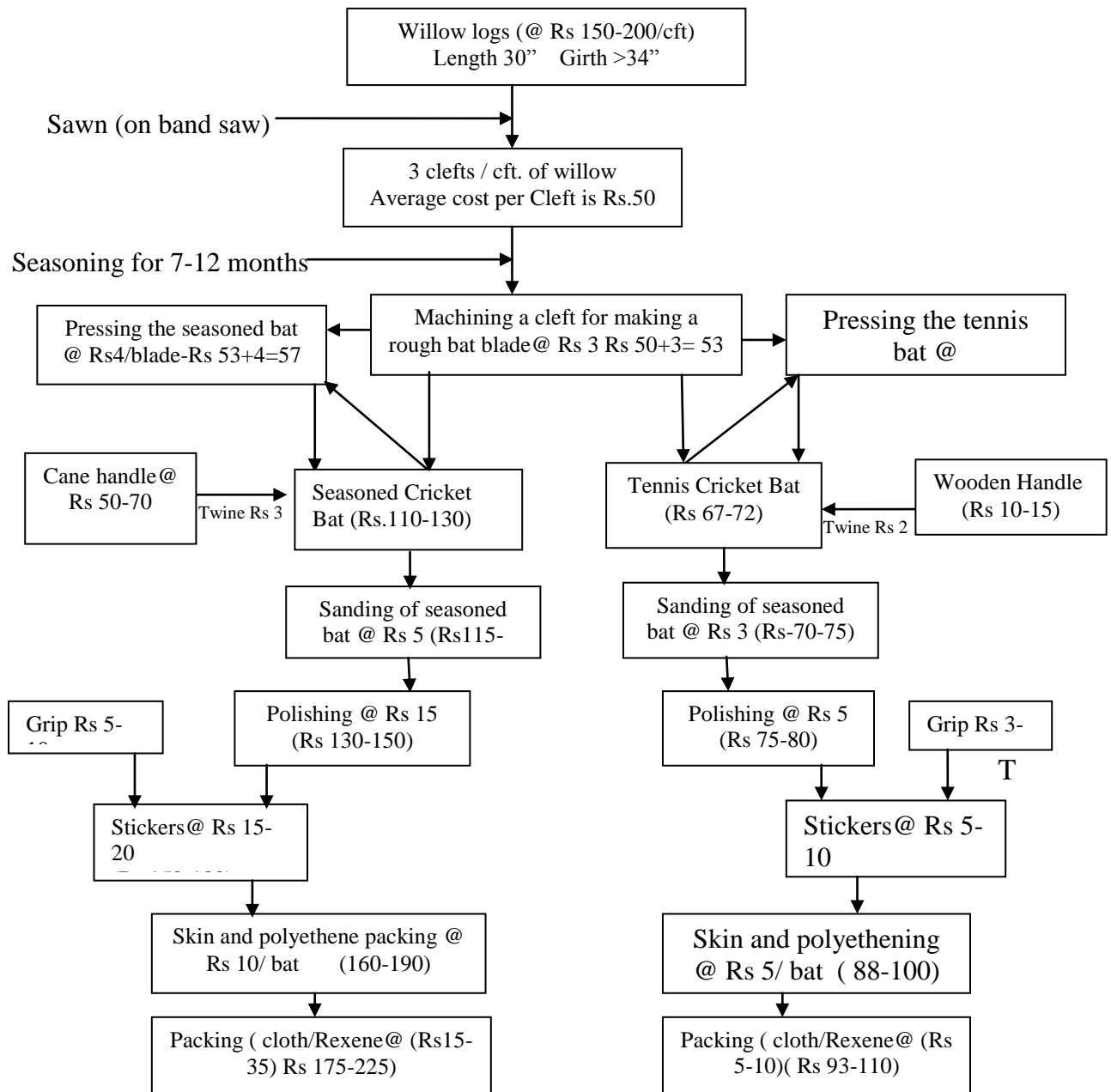
1. **Length:** The length of the bat impacts on bat speed in several areas. The longer the bat, the further away from the hands is the weight/sweet spot (place where the ball strikes the bat). Thus it will have more speed.
2. **Weight:** Heavier bats have a slower bat speed than lighter bats. A lighter bat will be faster and increase the chance of missing the ball. A heavier bat will not be quite as easy to miss the ball with but when you connect the ball will stay hit.
3. **Weight distribution:** A bat that has an even weight distribution will have a faster bat speed than a bat that has its weight in near the toe.

4. **Balance and pickup:** Balance and pickup describe the centre of gravity in the bat. If the centre of gravity of the bat is close to the handle, the pickup is quite poor and if the centre of gravity is approximately 8 inches from the shoulder then the pick should be good. To test the pickup of a bat, one has to hold the bat on your palm-top and try to lift it. If the bat feels heavy then the pickup is not great. If it is easy to lift & does not feel heavy then the bat should have a good balance and pickup.

Bat weight

The weight of the bat is crucial for cricket players in order to maximize their Performance. A heavy bat with a lot of wood in the middle will hit the ball a lot further than a lighter bat. A lighter bat will be faster meaning you are more likely to hit the ball in the middle. A lighter bat is recommended usually for opening batsman. This is due to the fact that a higher bat speed is required when facing a new ball. A heavier bat means that there will be the difference between playing the ball too early or too late. The next players can use slightly heavier bats with perfect bat speed and length for aggressive style.

4.4. VALUE CHAIN ANALYSIS



The above flowchart depicts the value chain of the cricket bat-manufacturing units in the Anantnag. It describes the amount of value addition done at each stage of processing. The main activities involved are:

- Procurement of raw material i.e. willow clefts
- Processing of willow clefts for manufacturing of cricket bat
- Importing of cane handles.

The price of round cubic feet of willow logs in the market is Rs 150 to Rs.200.00 on cash payment while the price can increase by Rs 5-10 on credit basis. The willow logs having girth more than 34 inches are sawn for willow clefts and the smaller girth willow logs are used for making shooks i.e. wooden boxes popular for apple packing. On an average the normal rate of willow cleft is Rs. 50 per piece. The natural seasoning of the willow cleft takes around 7-12 months which means that the working capital gets blocked for this period, which hampers the business cycle. However, if the cluster sets up its own seasoning plant then the willow clefts can be dried within 24-36 hours and thus making a huge difference in the working capital flow. When the seasoning of the cleft is completed, the clefts are shaved on an electric saw according to the required length of bat and a wedge fashioned cut is also made in the willow cleft to fit the cane or wooden handle. This is followed by planing with the help of wooden/hand planner. The normal rate for machining a cleft for making a rough blade is Rs. 3. Therefore, the average rate of willow cleft after machining comes out to be Rs. 53 (Rs.50+3). The clefts are then graded for manufacturing of season bats. The blades are pressed to make the wood flexible. This is a skilful job and hence is done by an expert craftsman of the unit. Majority of the damages occur during pressing. The season bats are more pressed as compared to tennis bats. While compensating the damages made, the average rate of pressing is fixed around Rs.4 for season bat blade and Rs.2 for tennis bat blade. To the season bat, a cane handle is fitted and based on the quality of cane, rubber strips and the number of pieces in the handle, its cost

varies from Rs.50 to Rs.70 Then the cost of Rs.3 for twine and glue is added and finally the cost of a seasoned cricket bat reaches around to Rs.110 to Rs. 130. While the cost of tennis bat fitted with a wooden handle (costing from Rs 10-15) and the twine for Rs.2, comes out to be around Rs.67 to Rs.72. The sanding, polishing, stickers, and packing as shown in the figure will bring the cost of the seasoned cricket bat to Rs.175 to 225, while the cost of tennis bat will come to Rs.93 to 110. The selling price of the seasoned cricket bat is from Rs.250- 1000 and that of the tennis bat is around Rs. 100 to 200.

4.5. Market Mechanism

Marketing has rightly been regarded as the key to the success of modern business. This view is further corroborated by Peter Drucker, who says that “there is only one valid definition of business purpose to create a customer.” He further says, “Because it is its purpose to create a customer, any business enterprise has two- and only these two- basic functions; marketing and innovation.

Marketing is a comprehensive process of bridging the gap between the producer and consumer. It “is the creation and delivery of a standard of living.” Marketing in a dynamic sense involves; finding out what consumers want; then planning and developing a product or service that will satisfy those wants, and then determining the best way to price, promote and distribute the product or service.

The Kashmir willow cricket bats are sold to other Indian states like Punjab, Uttar Pradesh, Delhi, Maharashtra, Madhya Pradesh, Gujarat, Chennai, Bangalore, Hyderabad and Kolkata etc. Among the forward linkage members, there are marketing agents, direct marketing and large industries. Most of the marketing is done through the marketing agents. However, the unit holders along with their produce visit the Indian cities to sell their product directly in the market. The willow clefts are supplied in lacs of numbers to Jalandhar, Jammu and Meerut based cricket bat-manufacturing units. It is worth

mentioning here that almost 80% of the world production of cricket bats is done in India for which the willow is supplied from Kashmir.

4.6. Conclusion

The cricket based industry provides employment to large number of skilled, semiskilled and unskilled people. The industry has readily available raw material especially willow and poplar for manufacturing of cricket bats. Other allied sports goods item like cricket balls, gloves, leg guard, for which raw material in the shape of sheep skin hides is available in abundance in the valley, the matter is the only providing the necessary know-how. Realizing the scope of the industry, State Govt. should take initiatives by providing the industrial unit holders such kind of facilities which will encourage them to producing more at least cost and also helps them to export more and more products to outside as well as ease their work. Therefore, cricket bat industry will jump into national and international arena and create a place for the industry in competitive international market.

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Chapter- 5 Cricket Bat Industry- An Empirical Study

This chapter is based on the analysis of data collected through field study. The study was conducted in different villages of tehsil Bijbehara of District Anantnag. These villages include Sangam, Halmullah, Sather, Pujteng, Mirzapura, Marhama, Punjpora, Bijbehara, Semthan, Gund, Thajwara, and Veer. The study is designed to make an analysis of cost structure of cricket bat manufacturing industry. District Anantnag spreads over an area of 3984 sq kms with a population of 1070144 and a literacy rate of 66% (Census 2011). It is the 3rd largest District of Jammu and Kashmir in population and largest according to area. It is regarded as commercial and financial capital as well as the largest business and trading centre of Kashmir valley.

The district comprises 6 tehsils viz Bijbehara, Pahalgam, Anantnag, Dooru, Shangus and Kokernag. It is not only the rice bowl of the valley but also rich in many small and cottage industries like handicraft, food processing, sports industry etc. Among six above mentioned tehsils, Bijbehara is the only tehsil where people are largely engaged with sports industry. Therefore, the Tehsil is dominant manufacturer of cricket bats. The tehsil constitutes 40 villages with 1 community block. There are about 195 cricket bat manufacturing units in the District. Out of these 195 cricket bat manufacturing units in different villages of tehsil Bijbehara, 40 (20%) units were randomly selected on simple random basis. The information regarding production, employment, sales etc. has been collected with the help of an open-end questionnaire, which was framed strictly in accordance with the objectives and hypotheses of the study.

In order to study whether cricket bat industry is a profitable enterprise, we have employed cost and return analysis of this venture with the help of the data

collected through field study. Costs are usually the expenditure incurred in the production by an enterprise, including variable and fixed costs. The variable costs are human labour, raw material, fuels charges, repair and maintenance, transport charges etc, and fixed costs comprising machinery, building, insurance charges, depreciation etc. The analysis of the data for the empirical estimation of the above mentioned variables has been done in the context of level of investment. For this purpose, the industrial units have been categorized into three classes such as; (i) those industries whose investment is below 20 lacs, (ii) Between 20 to 40 lacs and iii) and above 40 lacs. In so doing our endeavor will be to identify the nature of relationship existing between investment and output. In tracing out this relationship we have also attempted to capture various social, economic and demographic aspects of the unit holders.

5.1. Education status

Education is doubtlessly considered a very crucial factor influencing the economic growth and development. Education promotes economic growth and is in turn influenced and induced by economic growth. Almost all industrial countries in world have shown improvements in the industrial production only because of higher levels of education. The table 5.1 given below presents the information about the level of education of the sample respondents.

Table 5.1: Education levels of sample unit Holders

Education level	Frequency	Percentage
Illiterate	06	15.0
Elementary	03	7.50
Secondary	10	25.00
Higher secondary	16	40.00
Graduate	04	10.00
Post Graduate	01	2.50
Professional	0	0.00
Total	40	100

Source: Field Survey

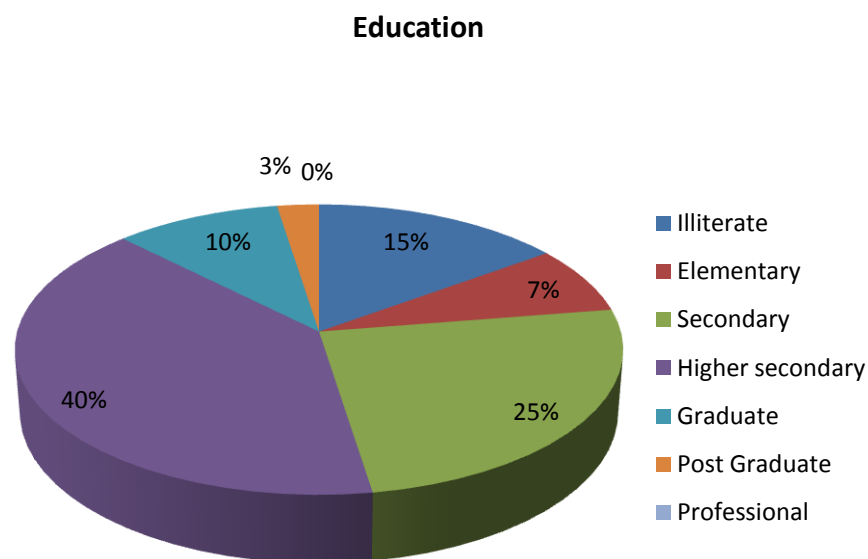


Fig 5.1: Level of education of the unit holders (percentage)

As is clear from above table and diagram, majority, 40 percent, of the respondent unit holders fall in the category of Higher Secondary education,

followed by 25 percent belonging to secondary level education. It is noteworthy that no respondent was found possessing technical qualification, while as 15 percent respondents were without any education and only about 10 percent respondents possessed higher qualification. The inference drawn from the above table is that 85 percent of the unit holders are literate.

5.2. Age and Gender

Age is an important factor responsible for efficient production, as the young people are more energetic, accommodative to the adoption of new ideas and innovations. Table 5.2 shows age and gender profile of the sample respondents.

Table 5.2: Age and Gender profile

Age (years)	Frequency	Percentage	Gender	
			male	Female
18-40	22	55.00	22	0
40-60	15	37.50	15	0
60 and above	03	7.50	03	0
Total	40	100	40	0

Source: Field survey

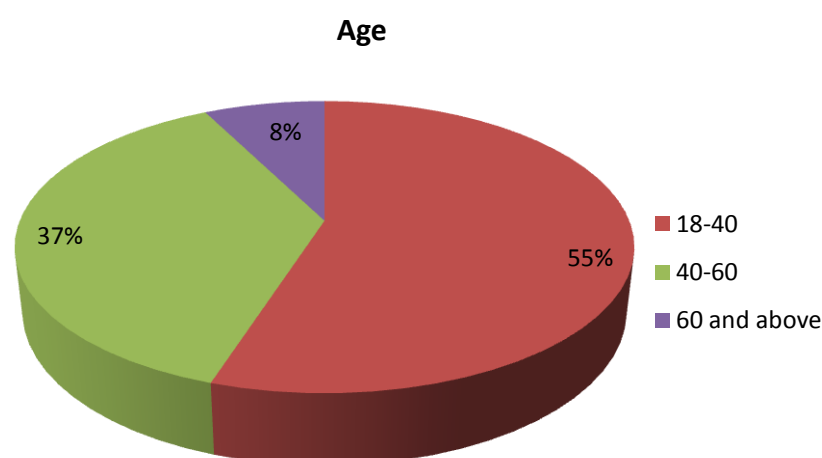


Fig 5.2: Age and Gender profile

As is evident from the above table and diagram, 55 percent of respondents fall in the age group of 18- 40 years, while as more than 37 percent respondents belong to the age group of 40-60 years. As a whole more than 90 percent entrepreneurs fall in the working age population of 18-60 years. At the same time, the bat industry in terms of our sample shows complete male occupation.

5.3. Proprietorship

Different types of ownership of bat industry in the study area are presented in the table 5.3

Table 5.3: Type of proprietorship

Proprietorship	Frequency	Percentage
Single	35	87.5
Joint	05	12.5
Leased	0	0.00
Total	40	100

Source: - field survey

Proprietorship

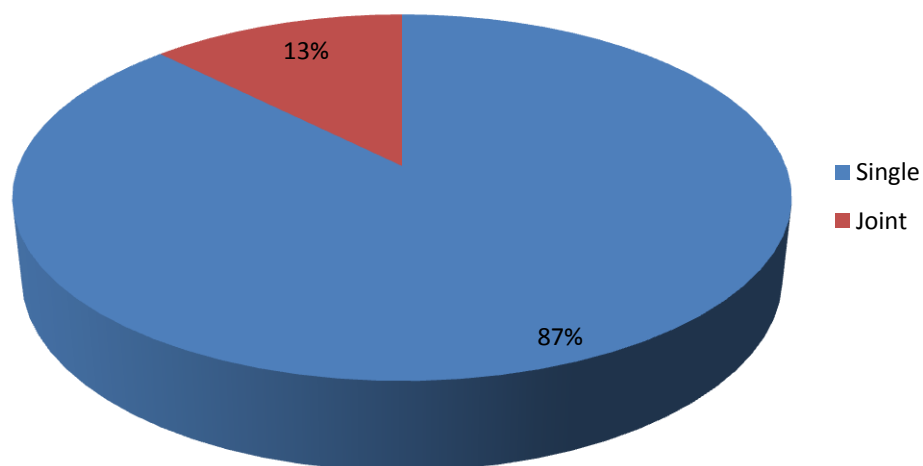


Fig 5.3: Type of proprietorship

The above table and diagram shows that 87.5 percent of the enterprises have sole proprietary types of ownership, while as 12.5 percent of enterprises have some kind of partnership. No enterprise was reported operating on leasehold arrangement.

5.4. Financial sources

The following table reveals the information regarding the sources of finance of the sample units.

Table 5.4: Sources of Finance

Source	Frequency	Percentage
Banks	10	25.0
Own Capital	29	72.5
Others	01	2.5
Total	40	100

Source: - Field survey

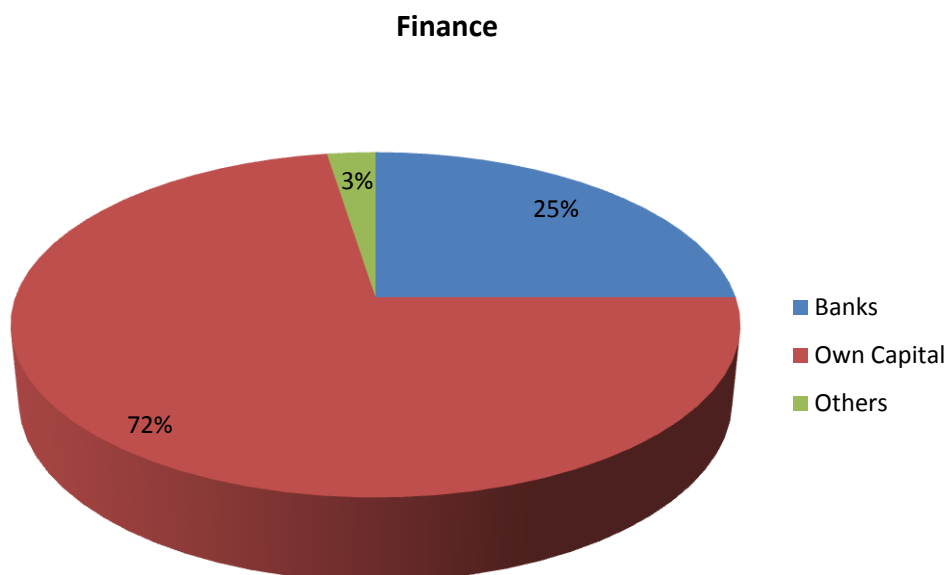


Fig 5.4: Sources of Finance

As is clear from the above table and figure, majority of the entrepreneurs, comprising more than 70 percent do not borrow from the financial institutions, but rely on their self generated funds. It was observed that banks cater to the need of only 25 percent of enterprises. While as only a negligible proportion of entrepreneurs (2.5 percent) avail the funds from other type of interest free loans, borrowing from relatives and friends.

5.5. Establishment

Information from the unit holders through a questionnaire in which basic question regarding for how long they are involved in the business was asked. The response provided by the respondents is given in the table 5.5.

Table 5.5: Time of establishment of units

Years	Frequency	Percentage
Less than 10	10	25
10-20	22	55
20 and above	08	20
Total	40	100

Source: - field survey

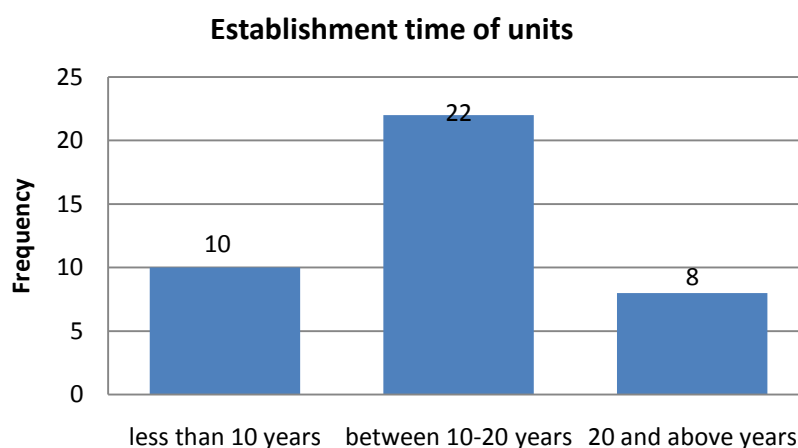


Fig 5.5: Experience of business unit holders (N=40)

The above table and figure reveals that 25 percent respondents were involved in the business from less than 10 years, 55 percent of the respondents were having an experience of handling this business between 10 to 20 years and 20 percent of the respondents with an experience of more than 20 years. It can also be observed from the table that 75 percent of the unit holders were with an experience of holding the units for more than 10 years.

5.6. Land Allocation

Table 5.6: Category wise area under operational holdings and bat industry

Size of investment (Rs lacs)	Frequency	Area under operational holdings (in kanals)	Area under cricket bat industry (in kanals)	%age area under bat industry	Average land area under bat industry (in kanals)
1	2	3	4	5	6= 4÷2
Below 20	14	140	18.50	13.21	1.32
20-40	22	220	32.50	14.77	1.47
40 and above	04	40	6.00	15.00	1.50
Total	40	400	57.00	14.25	1.42

Source: Field survey

It can be observed from the above table that the total area under cricket bat manufacturing industry of 40 unit holders is 57 kanals and total area under operational holdings is 400 kanals. This means 14.25 percent of the total land area of the unit holders is under cricket bat manufacturing industry. Out of 40 sample unit holders, 14 (35%) fall in the category whose investment is less than Rs 20 lacs, 22 (55%) fall in the category whose investment is between Rs 20-40 lacs and 4(10%) of unit holders fall in the category whose investment is more than Rs 40 lacs. The proportion of land devoted to cricket bat

manufacturing industry is largest in case of those unit holders whose investment is Rs 40 lacs and above followed by those unit holders whose investment is between Rs 20-40 lacs i.e. 14.77 percent and is lowest in those unit holders whose investment is less than Rs 20 lacs i.e. 13.21 percent.

5.7. Cost structure

The economic viability of an industrial unit is to a great extent determined by its cost structure. Working of small scale enterprise requires a variety of inputs, which incurs the cost of production. The study of cost structure in the present analysis is based on cross section data is confined to one year i.e. 2010-11 on the basis of information collected through the field survey.

5.8. Elements of cost

The cost structure of the industry is discussed under two broad categories-fixed cost and variable cost. The different items of fixed cost are machinery, building, rent, insurance, salary to top management staff, interest and taxes. The variable cost consists of expenditure on raw material, wages, fuel, transport, repair and maintenance, other expenses like expenditure on packing, thread, grips, ragmal, stickers etc. A detailed cost structure analysis is given below.

5.9. Fixed cost structure

The components of fixed cost in our study area are:

5.9.1. Capital: Capital constitutes machinery and building in our study. In order to find out annual value of machinery and building consumed in the process of production, we have to make an assessment of life span of these assets. After deliberating with the respondents the life of these assets was estimated to be about 50 years.

Table 5.7: Capital cost component (category wise)

Size of investment (Rs lacs)	Frequency	Annual Production (Nos. lacs)	Total value of capital Rs lacs	Total annual capital consumption Rs lacs	Average annual capital consumption per unit Rs lacs	Capital cost component per bat(Rs)
1	2	3	4	5=4÷50	6=5÷2	7=5÷3
Below 20	14	1.40	82.1	1.642	0.11	1.17
20-40	22	2.86	220	4.40	0.20	1.53
40 and above	04	0.60	63	1.26	0.30	2.1
All the three	40	4.86	365.1	7.30	0.18	1.50

Source:- Field survey

From the analysis of the data in the above table, it was found that average annual capital consumption was highest in case of business with investment more than 40 lacs, accounting for Rs 0.30 lacs, while as it was found to be lowest in case of business with the investment less than Rs 20 lacs, accounting for Rs 0.11 lacs. For all the three type of unit holders, taken together, average annual capital consumption was calculated to be Rs 0.18 lacs. Capital cost component per bat was found to be highest in case of large size investment unit holders i.e. Rs 2.1 and lowest in case of small investment unit holders i.e. Rs 1.17. While as it was found to be Rs 1.53 in case of business units with an investment between Rs 20-40 lacs.

5.9.2. Rental value: Rental value of the land is one of the important input costs in the cricket bat manufacturing industry. Rental value of land in case of the prospective unit holders was calculated on the basis of its opportunity cost i.e. next best alternative use foregone. We calculated rental value in terms of existing market value of land by taking into account savings rate of 8 percent per annum usually offered by the banks on the fixed deposit. During our field survey the average market value of land, found as Rs 20 lac per kanal², was

² The cost of the land per kanal is high because the land is located on either sides of the national highway.

multiplied by the total quantity of land held under bat manufacturing units by different class size investment business groups. The total rental value per year in different classes was obtained by applying 8% rate of interest. Finally, in order to calculate the rental value per bat category wise, total rental values in each class was divided by the total annual production of bats. Different rental values in each class are shown in the table 5.8.

Table 5.8: Rental value cost component (category wise)

Size of investment (Rs lacs)	Frequency	Annual Production (Nos.)	land under bat industry (kanals)	Rental value @ 8% per annum lacs	Rental value cost component per bat(Rs)
1	2	3	4	5	6=5÷3
Below 20	14	1.40	18.50	29.60	21.14
20-40	22	2.86	32.50	52.00	18.18
40 and above	04	0.60	6.00	9.60	16.00
All the three	40	4.86	57	91.20	18.76

Source: - Field survey

Rental value cost component per bat varies according to the size of investment. It is highest in case of unit holders with business investment of less than Rs 20 lacs, accounting for Rs 21.14 and lowest i.e. Rs 16.00 in case of unit holders with an investment of Rs 40 lacs and above. The rental value per bat for the business class with investment between Rs 20-40 lacs was observed to be 18.18. For all the three types of unit holders, taken together, average rental value cost component per bat was calculated to be Rs 18.76. The rental value decreases with increase in size of investment due to increasing tendency of average production of cricket bats with increase in the size of investment.

5.9.3. Salary to management staff: Salary to management staff constitutes an important component of cost in the manufacturing of cricket bats. This component is included in the fixed cost category which is different from daily wages taken as variable cost component.

Table 5.9: Salary cost component (category wise)

Size of investment (Rs lacs)	Frequency	Annual Production (Nos.) lacs	Managerial staff (Nos.)	Total annual salary lacs	Average annual salary lacs	Salary cost component per bat (Rs)
1	2	3	4	5	6= 5÷2	7=5÷3
Below 20	14	1.40	28	23.76	1.68	16.80
20-40	22	2.86	44	36.96	1.68	12.92
40 and above	04	0.60	8	6.72	1.68	11.2
All the three	40	4.86	80	67.2	1.68	13.82

Source: - Field survey

From the data contained in the table it is clear that salary component in terms of average annual salary remains same i.e. Rs 1.68 lacs for all the three categories. However, salary cost component per bat varies according to the size of investment. It is highest in case of small size investment unit holders i.e. Rs. 16.80, followed by medium size investment unit holders i.e. Rs 12.92 and is lowest in case of large size investment holders, accounting for Rs.11.2.

5.9.4. Insurance: Cricket bat manufacturing units are subject to various types of risks, to protect against such risks, units are insured.

Table 5.10: insurance cost component (Category wise)

Size of investment (Rs lacs)	Frequency	Annual Production (Nos.)	Total annual insurance (Rs lacs)	Average annual insurance per unit (Rs lacs)	Insurance cost component per bat(Rs)
1	2	3	4	5=4÷2	6=4÷3
Below 20	14	1.40	1.30	0.09	0.92
20-40	22	2.86	2.50	0.11	0.87
40 and above	04	0.60	0.85	0.21	1.40
All the three	40	4.86	4.65	0.11	0.95

Source: - Field survey

Analysis of the surveyed units revealed that in the bat manufacturing industry, it was found that average annual insurance was highest in case of industrial unit holders with investment more than Rs 40 lacs and it was found to be lowest in case of industrial unit holders with an investment less than Rs 20 lacs. When all the three categories are taken together, average annual insurance was calculated to be Rs 0.11 lacs. However, the insurance cost component per bat varies according to size of investment. It is highest in case of large size investment holders i.e. Rs 1.40, followed by medium size investment unit holders and is lowest in case of small investment unit holders i.e. Rs 0.92.

5.9.5. Other costs: The other cost items like taxes and interest have been clubbed together and are shown in the following table;

Table 5.11: Other costs component (category wise)

Size of investment (Rs lacs)	Frequency	Annual Production (Nos. lacs)	Total annual other costs Rs lacs	Average annual other costs per unit Rs lacs	Other cost component per bat (Rs)
1	2	3	4	5=4÷2	6=4÷3
Below 20	14	1.40	2.50	0.17	1.78
20-40	22	2.86	3.70	0.16	1.29
40 and above	04	0.60	1.60	0.40	2.66
All the three	40	4.86	7.80	0.19	1.60

Source:- Field survey

The above table reveals that average annual other costs are highest in case of the business with an investment of more than Rs 40 lacs, accounting for Rs 0.40 lacs, followed by those industrial unit holders, with an investment less than Rs 20 lacs i.e. Rs 0.17 lacs and is lowest in case of the business unit holders with an investment between Rs 20-40 lacs, accounting for Rs 0.16 lacs. For all the three categories of business, the averages annual other costs were calculated to be Rs 0.19 lacs. Other cost component per bat was found to be highest in case of industrial unit holders with an investment of more than Rs 40 lacs and lowest in case of business with an investment of between Rs 20-40 lacs, accounting for Rs 1.29.

5.10. Variable cost structure

The components of variable cost in our study are;

5.10.1. Raw material (willow)³: An important input without which bat industry is handicapped is willow. As we know, Cricket bats are mostly manufactured from willow.

³ It includes cost of carrying the willow logs from primary producers to the industrial units.

Table 5.12: Raw material cost component (Category wise)

Size of investment (Rs lacs)	Frequency	Annual Production (Nos. lacs)	Total annual raw material consumption Rs lacs	Average annual raw material consumption per unit Rs lacs	Raw material cost component per bat(Rs)
1	2	3	4	5=4÷2	6=4÷3
Below 20	14	1.40	145.00	10.35	103.57
20-40	22	2.86	305.50	13.88	106.81
40 and above	04	0.60	65.00	16.25	108.33
All the three	40	4.86	515.50	12.88	106.06

Source: - Field survey

The above table shows that average annual raw material consumption is highest in case of the activity with investment more than Rs 40 lacs i.e. Rs 16.25 lacs, followed by those unit holders whose investment is between Rs 20-40 lacs i.e. Rs 13.88 lacs and is lowest in case of business with investment less than Rs 20 lacs, accounting for Rs 10.35 lacs. The table also shows that cost of raw material on an average for all the three categories was calculated to be Rs 12.88 lacs annually. However, raw material cost component per bat varies among all the three categories, accounting for Rs 103.57, 106.81 and 108.33 for small, medium and large business enterprises respectively. The reason for increase in the cost per bat with the increase in the size of investment is that, because average annual raw material consumption increases with the size of investment. It appears that there is inverse relation between capital consumption efficiency and size of the business.

5.10.2. Human labour: Labour plays a dominant role in the cricket bat manufacturing industry. Human labour in the bat industry is employed on monthly basis and paid in cash in the form of wages.

Table 5.13: Human labour cost component (Category wise)

Size of investment (Rs lacs)	Frequency	Annual Production (Nos. lacs)	Employment				Total annual wages Rs lacs	Average annual wages Rs lacs	Labor cost component per bat(Rs)
			Skilled Nos.	Annual Wages Rs lacs	Unskilled Nos.	Annual Wages Rs lacs			
1	2	3	4	5	6	7	8=5+7	9=8÷2	10=8÷3
Below 20	14	1.40	50	30	15	7.2	37.20	2.65	26.57
20-40	22	2.86	90	54	55	26.40	80.40	3.65	28.11
40 and above	04	0.60	20	12	12	5.04	17.04	4.29	28.40
All the three	40	4.86	160	96	66	38.64	134.64	3.36	27.70

Source: - Field survey

The above table shows that average annual wages of the unit holders increase with the increase in the size of investment. Which is obvious, because with more investment more employment is generated. However, on an average for all the three type of units the annual average wage is about to Rs 3.36 lacs. It is clear from the above table that labor cost component per bat increases with the increase in size of investment. Labour cost component per bat is lowest in case of unit holders with investment less than Rs 20 lacs (smallest), while in case of medium and large unit holders labour cost component per bat is almost same i.e. Rs 28.11 and Rs 28.40 respectively. The reason for lowest labour cost in smaller units is that these units are employing the family labour along with

hired labour. Further, these small size unit holders are able to keep close watch in their business affairs, which adds to their efficient management.

5.10.3. Transport cost: As is clear from the data collected through the field study, cricket bats are mostly exported to Delhi, Jalhander, Meerut, Gujarat, Mumbai, and Karnataka etc. In order to export cricket bats to these States, an industry pays transportation cost.

Table 5.14: Transport cost component (Category wise)

Size of investment (Rs lacs)	Frequency	Annual Production (Nos. lacs)	Annual transport cost (Rs lacs)	Average transport cost per unit (Rs lacs)	Transport cost component per bat(Rs)
1	2	3	4	5=4÷2	6=4÷3
Below 20	14	1.40	20.10	1.43	14.35
20-40	22	2.86	40.15	1.82	14.03
40 and above	04	0.60	8.10	2.02	13.50
All the three	40	4.86	68.35	1.70	14.06

Source: - Field survey

The above table shows that average annual transport cost varies according to the size of investment. In case of unit holders with investment more than Rs 40 lacs, average annual transport cost is highest ie Rs 2.02 lacs and is lowest in case of the business with investment less than Rs 20 lacs, accounting for Rs 1.43 lacs. On an average, for all the three categories, annual transport cost was worked out to be Rs 1.70 lacs. The above table also shows that, transport cost component per bat decreases with the increase in investment. Transport cost component per bat stands at Rs 14.35, Rs 14.03 and Rs 13.50 for small, medium and large unit holders respectively. It was reported, as well as personally observed, from the field survey that large business units mostly had their own means of transport for export of their products resulting into reduction of costs.

5.10.4. Power and fuel: For the functioning of cricket bat manufacturing industry, power and other fuels plays an important role. Fuel composition in our analysis includes consumption of power, diesel and petrol.

Table 5.15: Power and fuel cost component (category wise)

Size of investment (Rs lacs)	Frequency	Annual Production (Nos. lacs)	Power charges annually Rs lacs	Fuel charges annually Rs lacs	Total energy cost Rs lacs	Average annual energy cost per unit Rs lacs	Energy cost component per bat(Rs)
1	2	3	4	5	6=4+5	7=6÷2	8=6÷3
Below 20	14	1.40	3.36	3.36	6.72	0.48	4.8
20-40	22	2.86	5.28	7.92	13.20	0.60	4.6
40 and above	04	0.60	0.96	1.92	2.88	0.72	4.8
All the three	40	4.86	9.60	13.20	22.8	0.57	4.6

Source: - Field survey

The above table depicts that on an average, energy cost increase with the increase in level of investment. In case of the unit holders with investment more than Rs 40 lacs, energy cost is highest, accounting for Rs 0.72 lacs annually, followed by the industrial activity with investment between Rs 20-40 lacs and is lowest in case of the business with investment below Rs 20 lacs, accounting for Rs 0.48 lacs. The table also shows that, energy cost component per bat is almost same for all the three categories ranging between Rs 4.6 to Rs 4.8 with an average for all the three equal to Rs 4.6 per bat. It was reported by all the sample unit holders that electricity facility was available at flat rates, which resulted into the same electric cost component per bat, irrespective of size of investment.

5.10.5. Other Costs: These costs include expenditure on grips, thread, ragmal, polish, handles in our study. Following table gives the clear picture of these costs.

Table: 5.16 other costs component (category wise)

Size of investment (Rs lacs)	Frequency	Annual Production (Nos. lacs)	Other annual costs Rs lacs	Average annual other costs per unit Rs lacs	Other cost component per bat(Rs)
1	2	3	4	5=4÷2	6=4÷3
Below 20	14	1.40	32.90	2.35	23.50
20-40	22	2.86	58.30	2.65	20.38
40 and above	04	0.60	11.20	2.80	18.66
Total	40	4.86	102.40	2.56	21.06

Source: - Field survey

The analysis of the data contained in the table 5.16 shows that, other costs on an average are calculated to be Rs 2.56 lacs for all the three categories. These costs are highest in case of the business with investment more than Rs 40 lacs, accounting for Rs 2.80 lacs and lowest in case of the business with investment less than Rs 20 lacs, accounting for Rs 2.35 lacs. The above table also shows that other cost component per bat was calculated to be highest in case of small investment unit holders i.e. Rs 23.5, followed by medium size investment unit holders and lowest for large size investment unit holders i.e. Rs 18.66. The other cost decreases with the increase in investment because large investment unit holders directly purchases items like grip, thread, fevicol etc from the wholesaler.

5.10.6 Repair and maintenance: These costs are insignificant proportion of the cost of production.

Table 5.17: Repair and maintenance cost component (Category wise)

Size of investment (Rs lacs)	Frequency	Annual Production (Nos. lacs)	Repairs and maintenance Rs lacs	Average repair and maintenance cost Rs lacs	Repairs and maintenance Cost component per bat(Rs)
1	2	3	4	5=4÷2	6=4÷3
Below 20	14	1.40	1.12	0.08	0.80
20-40	22	2.86	2.20	0.10	0.76
40 and above	04	0.60	0.44	0.11	0.76
All the three	409	4.86	3.76	0.09	0.77

Source: Field survey

The above table reveals that on an average, repair and maintenance costs are highest in case of those industrial units whose investment is more than Rs 40 lacs, accounting for Rs 0.11 lacs and is lowest in case of those industrial units whose investment less than Rs 20 lacs, accounting for Rs 0.08 lac. The average repair and maintenance cost is calculated to be Rs 0.09 lacs for all the three categories taken together. However, repair and maintenance cost component per bat is almost same for all the three categories.

5.11. Aggregation of inputs

In order to work out cost of Cricket bat industry all the fixed cost components per bat i.e. salary to top management staff, rental value, capital, insurance and variable cost components per bat i.e. raw material, labor cost, transport cost, repair and maintenance costs have been clubbed together. By clubbing them total expenditure per bat has been worked out which is shown in the table -5.18.

Table 5.18: Cost structure per bat – Category wise

Investment level	Frequency	Fixed cost						Variable cost							
		Annual salary	Rental value	Other costs *	Capital	Insurance	Total fixed cost	Raw material cost	Labor cost	Transport cost	Energy cost	Other cost **	Repair and Maintenance cost	Total variable cost	Total cost per bat
Below 20	14	16.8	21.14	1.78	1.17	0.92	41.84	103.57	26.6	14.35	4.8	23.5	0.8	173.59	215.43
20-40	22	12.92	18.18	1.29	1.53	0.87	34.78	106.81	28.1	14.03	4.6	20.38	0.76	174.69	209.47
40 & above	4	11.2	16.00	2.66	2.1	1.4	33.34	108.33	28.4	13.5	4.8	18.66	0.76	174.45	207.79
Average	40	13.82	18.44	1.6	1.5	0.95	36.31	106.23	28.4	13.96	4.7	20.34	0.77	174.24	210.55

Source:- Field survey * taxes and interest payment **expenditure on handles, grips, thread.

From table 5.18, it is clear that with the increase in the size of investment, total cost component per bat decreases. It is calculated to be highest in case of small investment unit holders with an investment of less than Rs 20 lacs, accounting for Rs.215.43, followed by medium investment unit holders and is lowest in case of large investment unit holders i.e. Rs. 207.79. On an average for all the three unit holders, total cost per bat accounting for Rs. 210.55. The inferences drawn from the above analysis that increasing returns to scale occurs in cricket bat manufacturing industry.

Table 5.19: Cost composition per bat (category wise)

Investment Level	Frequency	Fixed Costs						Variable Costs							Total Cost Per bat/Rs
		Annual salary	Rental value	Other costs *	Capital	Insurance	Total Fixed Cost	Raw material	Labor cost	Transport cost	Fuel Charges	Other costs**	Repair and maintenance	Total Variable Cost	
Below 20	14	16.80 (7.79)	21.14 (9.81)	1.78 (0.82)	1.17 (0.54)	0.92 (0.42)	41.84 (19.42)	103.57 (41.07)	26.57 (12.33)	14.35 (6.66)	4.8 (2.22)	23.5 (10.90)	0.80 (0.37)	173.59 (80.57)	215.43 (100)
20-40	22	12.92 (6.16)	18.18 (8.67)	1.29 (0.61)	1.53 (0.73)	0.87 (0.41)	34.78 (16.60)	106.81 (50.99)	28.11 (13.41)	14.03 (6.69)	4.6 (2.19)	20.38 (9.72)	0.76 (0.36)	174.69 (83.39)	209.47 (100)
40 & above	04	11.20 (5.39)	16.00 (7.7)	2.66 (1.28)	2.1 (1.01)	1.40 (0.67)	33.34 (16.04)	108.33 (52.13)	28.40 (13.66)	13.50 (6.49)	4.8 (2.31)	18.66 (8.98)	0.76 (0.36)	174.45 (83.95)	207.79 (100)
Average	40	13.82 (6.56)	18.44 (8.76)	1.60 (0.75)	1.50 (0.71)	0.95 (0.45)	36.31 (17.24)	106.23 (50.45)	28.36 (13.46)	13.96 (6.63)	4.7 (2.23)	20.84 (9.89)	0.77 (0.36)	174.24 (82.75)	210.55 (100)

Source: - field survey

Figures in parentheses indicate percentage share

As for as, the cost structure of cricket bat manufacturing industry is concerned, raw material is the most expensive component in the manufacturing of cricket bats. On an average, raw material constitutes about 50 percent of the total cost. This cost component however, is highest in case of large business unit holders i.e. 52.13 percent, followed by medium investment business units and is lowest i.e. 41.07 percent in case of small investment business units.

Human labour cost component per bat is the second major input which on average accounts for 13.46 percent of the total cost. It is highest in case of the business with investment more than Rs 40 lacs, accounting for 13.66 percent and is lowest in case of the business unit holders with investment less than Rs 20 lacs, accounting for 12.33 percent.

Other costs including expenditure on handle, grip, thread etc. is the third major input cost, constituting about 10 percent of the total cost on an average for all the three categories. This cost component is highest in case of small investment unit holders i.e. 10.90 percent, followed by medium investment unit holders and lowest in case of large investment unit holders i.e. 8.98 percent.

Rental value cost component is the fourth major input used in the cricket bat manufacturing. This cost constitutes 8.76 percent of the total cost. This cost component is highest in case of small investment unit holders i.e. 9.81 percent, followed by medium investment unit holders and lowest in case of large investment unit holders i.e. 7.7 percent.

Transport cost component per bat is the fifth major input of the cricket bat manufacturing industry, which on an average account for about 7 percent of the total cost. The share of this cost component per bat was found to be almost same.

Annual salary cost component is the sixth major input constituting about 6 percent of the total cost. This cost component is highest in case of small investment unit holders i.e. 7.79 percent, followed by medium investment unit holders and lowest in case of large investment unit holders i.e. 5.37 percent.

Repair and maintenance cost component per bat constitutes a minor cost proportion accounting for only 0.36 percent of the total cost.

5.12. Returns

A firm invests money in its business with an expectation of some returns from it in the future. The table given below gives us the clear picture of gross returns of cricket bat industry

Table 5.20: Calculation of Gross and net returns of Bat Industry

Investment	Frequency	Annual production nos. lacs	Average annual production nos. lacs	Annual production in Rs lacs/Total gross returns(Qty×price) Average Price = Rs 500	Average annual production in Rs lacs/ average gross returns(Qty×price)	Total cost Rs lacs	Total net returns TGR-TC	Average cost* per bat Rs	Average net returns per bat (Price-average cost per bat)
1	2	3	4=3÷2	5	6=4×price	7	8=5-7	9	10
Below -20	14	1.40	0.10	770.00	55.00	301.84	468.16	215.43	284.57
20-40	22	2.86	0.13	1573.00	71.5	599.34	973.66	209.47	290.53
40 and above	04	0.60	0.15	330.00	82.5	124.69	205.31	207.79	292.21
All the three	40	4.86	0.38	2673.00	208.5	1025.84	1647.16	210.55	289.45

Source: - field survey

* table 5.19, TGR=Total Gross Returns, TC=Total Cost

As it is clear from the data shown in the above table, average cost per bat decreases with the increase in the level of investment. It is highest in case of small investment unit holders and lowest in case of large investment unit holders. The above analysis shows that cricket bat manufacturing industry is subject to increasing returns to scale.

Table 5.21: Gross returns per rupee investment

Total fixed Investment in the business(Rs lacs)	Total cost (Rs lacs)	Gross returns (Rs lacs)	Gross returns per rupee investment
1	2	3	4=3÷2
Below 20	301.84	770.00	2.55
20 – 40	599.38	1573.00	2.62
40 & above	124.69	330.00	2.64
All the three	1025.84	2673	2.60

Source:- field survey

5.13. Returns to investment

In terms of returns per rupee of investment, the gross returns vary between Rs 2.55 to Rs 2.64 among three categories, which on average is calculated as Rs 2.60 for all the three categories. Gross returns per rupee investment is highest in case of large investment unit holders, accounting for Rs. 2.64, followed by medium size investment unit holders and is lowest in case of small investment unit holders i.e. Rs 2.55.

Table 5.22: Net returns per rupee of investment

Total fixed Investment in the business (Rs lacs)	Total cost (Rs lacs)	Gross returns (Rs lacs)	Net returns (Rs lacs)	Net returns per rupee investment
1	2	3	4=3-2	5=4÷2
Below 20	301.84	770.00	468.16	1.55
20 – 40	599.38	1573.00	973.62	1.62
40 & above	124.69	330.00	205.31	1.64
All the three	1025.84	2673	1647.16	1.60

Source:- field survey

The above table gives the clear picture of net returns per rupee of investment. Net returns per rupee investment on an average are calculated to be Rs 1.60 for all the three categories. It is calculated to be highest in case of large investment unit holders i.e. Rs 1.64, followed by medium size investment unit holders and is lowest in case of small investment unit holders, accounting for Rs 1.55.

5.14. Factor input efficiency

In order to determine the efficiency of factor inputs, in production, more information on the specific contribution of input factors is necessary. With a view to evaluate the contribution of each specific input factor in combination with other factors, responsible for change in output level, the Cobb-Douglas production function has been used to estimate the effect of factor inputs such as labour and capital on the output.

The general form of Cobb-Douglas production function is:

$$Q = AL^{\alpha} K^{\beta}$$

$$\log Q = \log A + \alpha \log L + \beta \log K + \log U$$

The estimation of production function of a Cobb-Douglas form, for cricket bat manufacturing industry in district Anantnag on the basis of the cross sectional data concerning a random sample of 40 units is given in the following table:

Table 5.23: worksheet for Model $Q = AL^a K^b$

S.no	Output Y	Labour L (Nos.)	Capital K (Rs lacs)	Y log Q	X ₂ logL	X ₃ logK	y _i (Y _i - \bar{y})	X ₂ (X ₂ - \bar{X}_2)	X ₃ (X ₃ - \bar{X}_3)	y _i ²	X ₂ ²	X ₃ ²	y _i X ₂	y _i X ₃	X ₂ X ₃
1	100.38	17	51.65	4.6089	2.8332	3.9444	1.2522	0.8772	0.8694	1.568	0.7694	0.7558	1.0984	1.0886	0.7626
2	14.7	5	10.21	2.6878	1.6094	2.3233	-0.6685	-0.3466	-0.7517	0.4474	0.1201	0.565	0.2317	0.5025	0.2605
3	66.8	16	40.07	4.2017	2.7725	3.6906	0.845	0.8165	0.6156	0.714	0.6666	0.3789	0.6899	0.5201	0.5026
4	70.93	15	33.14	4.2616	2.708	3.5007	0.9049	0.752	0.4257	0.8188	0.5655	0.1812	0.6804	0.3852	0.3201
5	23.4	5	8.5	3.1527	1.6094	2.14	-0.204	-0.3466	0.935	0.0416	0.1201	0.8742	0.0707	0.1907	0.324
6	64.39	11	19.6	4.1649	2.3978	2.9755	0.8082	0.4418	0.0995	0.6531	0.1951	0.0099	0.357	-0.0804	-0.0439
7	42.7	7	37.23	3.7541	1.9469	3.6171	0.3974	-0.0091	0.542	0.1579	0	0.2938	-0.0036	0.2154	-0.0049
8	13.7	5	14.2	2.6173	1.6094	2.6532	-0.7394	-0.3466	0.4218	0.5467	0.1201	0.1779	0.2562	0.3118	0.1461
9	54.26	16	41.74	3.9937	2.7725	3.7314	0.637	0.8165	0.6564	0.4057	0.6666	0.4308	0.5201	0.4181	0.5359
10	20.9	6	17.04	3.0397	1.7917	2.8355	-0.317	-0.1643	-0.2395	0.1004	0.0269	0.0573	0.052	0.0759	0.0648
11	20.2	6	13.7	3.0056	1.7917	2.6173	-0.3511	-0.1643	-0.4577	0.1232	0.0269	0.2094	0.0576	0.1606	0.0752
12	29.7	6	15.7	3.3911	1.7917	2.7536	0.0344	-0.1643	-0.3214	0.0011	0.0269	0.1032	-0.0056	-0.011	0.0528
13	7.7	7	22.27	2.0412	1.9459	3.1032	-1.3155	-0.0101	0.0282	1.7305	0	0.0007	0.0132	0.037	-0.0002
14	29.45	6	30.55	3.3826	1.7917	3.4193	0.0259	-0.1643	0.3443	0.0006	0.0269	0.1185	-0.0042	0.0089	-0.0565
15	28.18	7	30.8	3.3386	1.9459	3.4275	-0.0181	-0.0101	0.3525	0.0003	0.0001	0.1242	0.0001	-0.0063	-0.0035
16	30.5	7	24.5	3.4177	1.9459	3.1986	0.061	-0.0101	0.1236	0.0037	0.0001	0.0152	-0.0006	-0.0075	-0.0012
17	22.7	5	22.3	3.1223	1.6094	3.1045	-0.2344	-0.3466	0.0295	0.0549	0.1201	0.0008	0.0824	-0.0069	-0.0102
18	8.6	5	21.3	2.1517	1.6094	3.0587	-1.205	-0.3466	-0.0163	1.452	0.1201	0.0002	0.4176	0.0196	0.0056
19	28.4	6	27	3.3463	1.7917	3.2958	-0.0104	-0.1643	0.2208	0.0001	0.0269	0.0487	0.0017	-0.0022	-0.0362
20	25.59	7	24.2	3.2422	1.9459	3.1863	-0.1145	-0.0101	0.1113	0.0131	0.0001	0.0123	0.0011	0.0127	-0.0011
21	49.11	7	30.8	3.894	1.9459	3.4227	0.5373	-0.0101	0.3477	0.2886	0.0001	0.1208	-0.0054	0.1868	-0.0034
22	21.5	6	23.5	3.068	1.7917	3.157	-0.2887	-0.1643	0.082	0.0833	0.0269	0.0067	0.0474	-0.0236	0.0134
23	49.3	7	30.6	3.8979	1.9459	3.421	0.5412	-0.0101	0.346	0.2928	0.0001	0.1197	-0.0054	0.1872	-0.0034
24	46.3	5	25.1	3.8351	1.6094	3.2228	0.4784	-0.3466	0.1478	0.2288	0.1201	0.0218	-0.1658	0.0707	-0.0512
25	36.9	7	28.7	3.6082	1.9459	3.3568	0.2515	-0.0101	0.2818	0.0632	0.0001	0.0794	-0.0025	0.0708	-0.003

26	15.3	5	14.6	2.7278	1.6094	2.681	-0.6289	-0.3466	-0.394	0.3955	0.1201	0.1552	0.2179	0.2477	0.1365
27	29.22	7	23.2	3.3748	1.9459	3.1441	0.0181	-0.0101	0.0691	0.0003	0.0001	0.0047	-0.0001	0.0012	-0.0006
28	20.9	5	19.5	3.0397	1.6094	2.9704	-0.317	-0.3466	-0.1046	0.1004	0.1201	0.0109	0.1098	0.0331	0.0362
29	23.12	7	21.87	3.1406	1.9459	3.0851	-0.2161	-0.0101	0.0101	0.0466	0.0001	0.0001	0.0021	-0.0021	-0.0001
30	42.22	11	38.27	3.7428	2.3978	3.6446	0.3861	0.4418	0.5696	0.149	0.1951	0.3244	0.1705	0.2199	0.2516
31	42.17	7	27.83	3.7417	1.9459	3.3261	0.385	-0.0101	0.2511	0.1482	0.0001	0.063	-0.0038	0.0966	-0.0025
32	63.86	9	33.14	4.1566	2.1972	3.5007	0.7999	0.2412	0.4257	0.6398	0.0581	0.1812	0.1929	0.3405	0.1026
33	74.51	11	41.49	4.306	2.3978	3.7254	0.9493	0.4418	0.6504	0.9011	0.1951	0.423	0.4194	0.6174	0.2873
34	15.5	7	12.4	2.7408	1.9459	2.5176	-0.6159	-0.0101	-0.5574	0.3793	0.0001	0.3106	0.0062	0.3433	0.0055
35	12.5	5	10.4	2.5257	1.6094	2.3418	-0.831	-0.3466	-0.7332	0.6905	0.1201	0.5375	0.288	0.6092	0.2541
36	30.1	5	18.8	3.4045	1.6094	2.9378	0.0478	-0.3466	-0.1372	0.0022	0.1201	0.0188	-0.0165	-0.0065	0.0475
37	32.7	11	32.7	3.4873	2.3978	1.2491	0.1306	0.4488	-1.8259	0.017	0.1951	3.3339	0.0576	-0.2384	-0.8066
38	12.37	4	15.9	2.5152	1.3862	2.7663	-0.8415	-0.5698	-0.3087	0.7031	0.3246	0.0952	0.4794	0.2597	0.1758
39	12.06	4	10.6	2.4898	1.3862	2.3608	-0.8669	-0.5698	-0.7142	0.7515	0.3246	0.51	0.4939	0.6191	0.4069
40	38.56	11	36.4	3.6522	2.3978	3.5945	0.2955	0.4418	0.5195	0.0873	0.1951	0.2698	0.1305	0.1535	0.2295
=	-	-	1001.5	134.2704	78.2408	123.0021	0.0028	0.0078	2.9146	14.8016	5.7143	10.9447	6.9322	7.6189	3.9686

$$\bar{Y} = 3.2654 \quad \bar{X}_2 = 1.8958 \quad \bar{X}_3 = 2.9851$$

$$\hat{\alpha} = \frac{(y_i x_2)(x_3^2) - (x_2 x_3)(y_i x_3)}{(x_2^2)(x_3^2) - (x_2 x_3)^2}$$

$$\hat{\alpha} = \frac{(6.9322)(10.9447) - (3.9686)(7.6189)}{(5.7143)(10.9446) - (3.9686)^2} = 0.9752$$

$$\hat{\beta} = \frac{(y_i x_3)(x_2^2) - (x_2 x_3)(y_i x_2)}{(x_2^2)(x_3^2) - (x_2 x_3)^2}$$

$$\hat{\beta} = \frac{(7.6189)(5.7143) - (3.9686)(6.9322)}{(5.7143)(10.9446) - (3.9686)^2} = 0.3424$$

$$\text{Log. A} = \bar{Y} - \hat{\alpha}\bar{x}_2 - \hat{\beta}\bar{x}_3$$

$$\text{Log. A} = 3.3567 - (0.9752)(1.956) - (0.3424)(3.0750) = 0.3992$$

$$R^2 = \frac{\hat{\alpha}\sum X_2 Y_I + \hat{\beta}\sum X_3 Y_I}{\sum Y_I^2}$$

$$R^2 = \frac{(0.9752)(6.9322) + (0.3424)(7.6189)}{14.8016} = 0.64$$

$$\sum e_i^2 = \sum Y_I^2 (1 - R^2)$$

$$\sum e_i^2 = 14.8016 (1 - 0.64) = 5.4336$$

$$\sigma_u^2 = \frac{\sum e_i^2}{n-2}$$

$$\sigma_u^2 = \frac{5.4336}{40-2} = 0.1429$$

$$\text{Var.}(\hat{\alpha}) = \frac{\sigma_u^2 \sum x_3^2}{\sum x_2^2 \sum x_3^2 - (x_2 x_3)^2}$$

$$\text{Var.}(\hat{\alpha}) = \frac{(0.1429)(10.9447)}{(5.7143)(10.9447) - (3.9686)^2} = 0.0334$$

$$\text{Se}(\hat{\alpha}) = \sqrt{\text{var}(\hat{\alpha})}$$

$$\text{Se}(\hat{\alpha}) = 0.1828$$

$$\text{Var.}(\hat{\beta}) = \frac{\sigma_u^2 \sum x_2^2}{\sum x_2^2 \sum x_3^2 - (x_2 x_3)^2}$$

$$\text{Var.}(\hat{\beta}) = \frac{(0.1429)(5.7143)}{(5.7143)(10.9447) - (3.9686)^2} = 0.0174$$

$$\text{Se}(\hat{\beta}) = \sqrt{\text{var}(\hat{\beta})}$$

$$\text{Se}(\hat{\beta}) = 0.1319$$

The result can be interpreted in the following form;

$$Q = A (L)^{0.9752} (K)^{0.3424} \quad \text{where, } A = e^{0.50}$$

From the above estimated results, it is observed that the output elastic ties of labor and capital are 0.9752 and 0.3424 respectively. In other words, holding the capital input constant, a one percent increase in labor input leads on the average to about 0.97 percent increase in output. Similarly, holding the labor input constant, a one percent increase in capital leads on the average to about 0.34 percent increase in output.

From the statistical view point, the estimated model fits the data quite well, the R^2 – value of 0.64 means that about 64 percent of the variation in the output is explained by the labor and capital.

5.15. Testing of Returns to Scale

Adding the two output elastic ties, we obtain 1.3176, which gives the value of “returns to scale” parameter. Therefore it can be said that, output is characterized by increasing returns to scale.

5.16. Problems faced by cricket bat manufacturing units

The cricket bat manufacturing industry acts as a nursery for the development of entrepreneurial talent in district Anantnag. It is a dynamic and vibrant sector of the economy of different villages like Halmullah, Sangam, Sethar etc. Besides, the industry is an important source of livelihood to thousands of people in the district; it was observed during the survey that the industry is facing various problems which hamper its spontaneous growth. In general, it was observed that each and every cricket bat manufacturing unit was hit by one or more problems. The major problems identified with cricket bat manufacturing units in District Anantnag relate to following aspects;

- Raw Material
- Machinery and Production
- Products and Marketing
- Power
- Infrastructure Facilities
- Political instability

5.16.1. Raw material

The raw material requirement for manufacturing cricket bat is met mainly from the following sources:

- a) Willow Clefs obtained from Willow Trees
- b) Imported Cane Handles
- c) Handles made of wood used for Tennis Bats

Instead of helping this industry to prosper, the Government has allowed to send unlimited number of willow clefs outside the state on quota basis to Jalandhar and Meerut based sports industries, who then export at the cost of Kashmiri bat manufacturing units to outside markets. The unit holders feel that there should be a ban on selling of willow clefs outside the state to revive the cricket bat industry at Anantnag. All the raw material for making the cane handle is bought from the traders of Jalandhar, who themselves import cane from Indonesia, Andaman and Assam. If the unit holders and their craftsmen are able to make good quality cane handles within their premises then it will reduce the manufacturing cost immensely. It may be mentioned that around 25 lac cricket bats are manufactured annually, which is a good number for the units to procure directly by forming an association. The problem of raw material is of four types i.e. the problem of quality, quantity, delivery and prices.

Table 5.24: Number of units reporting of raw material problem

Total no. of units surveyed	Nature of problem w.r.t raw material			
	Quality	Quantity	Delivery	Price
40	0	15 (37.5%)	0	25 (62.5%)

Source:- field survey

The above table shows that, out of 40 sample units surveyed, 15 (37.5%) units are facing problem of adequate quantity of raw material, 25 (62.5%) of unit holders are facing the problem of higher price.

5.16.2. Machinery and production

There are 5-9 types of machines used in the cricket bat-manufacturing cluster at Anantnag. They are band saw, pressing machine, sander machine/sander roller,

cutter machine, wooden lathe machine, buffing machine, shine pack machine etc. These machines are purchased from the neighbouring state of Punjab and cost major a lacs of rupees. A majority of the entrepreneurs are using these customized machines. There are other machines/plants which are also important in the manufacturing processes but have not been introduced so far because of their high cost.

5.16.3. Products and marketing

There are 242 cricket bat-manufacturing units in the cluster out of which 195 are functional. Annually 20-25 lakh cricket bats are manufactured that generate revenue of Rs.10-16 crores. The unit holders are not aware of the concept of subcontract. The products are marketed only within India as there is a lack of awareness on advanced technologies and other requisites that are a pre-requisite for the international market. A technology driven intervention can increase the cluster turnover by three to four folds. Also the marketing activities need to be integrated in order to explore the global markets. Due to the small size of the individual units, it is imperative that networks are created in order to go for ISO-9000 certification and thereby capture large export orders. Export consortia can be formed to ensure brand building, participation in international fairs, buyer negotiations and compete with other countries on quality and price fronts

Table 5.25: Problems of marketing

Total no. of units surveyed	No. of units having marketing problem
40	15(37.5%)

Source: field survey

It was observed that more than 37 percent of respondent unit holders are reporting that marketing problem is a very serious problem which hampers the development of industry.

5.16.4. Power

One of the requirements of an enterprise to work effectively and efficiently is the regular and adequate power supply and this basic facility is not provided adequately.

Table 5.26: No. of units having problems of power supply

Total no. of units surveyed	No of units reporting problem of power supply
40	40 (100)

Source:- field survey

The above table shows that all the respondent unit holders i.e. 40 (100%) reported that inadequate and irregular supply of power was the major hindrance for their efficient working. It was reported by the unit holders that the erratic power supply i.e. only for 2 to 4 hours in a day results in damage to the machinery and causes suspension of work for long hours, keeping men, materials and machines idle. All the entrepreneurs have complained that almost every day the production is affected on account of power break down. As such the survey revealed that power problem is most predominant.

5.16.5. Infrastructure

The enterprises are mostly concentrated on the Jammu-Srinagar National Highway strip of 13 kilometers, from Bijbehara to Chursoo. The sports goods complex acquired in 1976-77 for the development was provided with all the latest machinery, technical know-how, seasoning plant, common facilities centre etc. but is now in ruins after the security forces evacuated the units. The power cuts/load shedding programme hampers the production. Most of them have now installed diesel generators to run their units smoothly. There is a decent availability of skilled workers to run the machines within the factory premises. There is hardly any engineer employed in these enterprises and the business is mainly family oriented. It is necessary that entrepreneurs understand the need for adaptation to best management practices, skill up gradation, product innovation, creation of excellent infrastructure, stimulating

acquisition of foreign technology, R&D, working with financial institutions and local governments in evolving a common strategy for their development. There are no training facilities or institutions available within the Anantnag district except the ITI institute. The foregoing survey data gives a significant insight into the nature of bottlenecks experienced by cricket bat manufacturing units. It clearly shows that political instability and uncertainty has added to the list of contributory factors for the poor performance of bat industry.

5.17. To sum up following inferences can be drawn from the study

1. The cricket bat manufacturing industry is subject to increasing returns to scale i.e. with the increase in the size of investment cost of production declines.
2. The analysis shows that variable cost constitutes about 83 percent and fixed cost constitutes about 17 percent of the total cost.
3. The dominant input cost in all the three investment unit holders is raw material that constitutes more than 50 percent of the total cost, followed by labour and other costs including handle, grip, thread etc, accounting for 13.46 percent and 9.89 percent respectively.
4. The gross and net returns increase with the increase in level of investment from small size investment unit holders to large size investment unit holders.
5. The study also shows that small investment unit holders are least profitable because of their low net returns and high cost of production in terms of annual salary, rental value and other costs. Although, these unit holders minimize their variable costs but due to high fixed costs overall cost of production is high.
6. Gross returns per rupee of investment vary between Rupees 2.55 to Rupees 2.64 among the three investment unit holders, with an average value of Rupees 2.60.

7. Net returns per rupee of investment vary between Rupees 1.55 to Rupees 1.64 among all the three categories, with an average value of rupees 1.60.
8. The analysis shows that 37.5 percent unit holders facing problem of adequate quality of raw material and 62.5 percent of unit holders are facing the problem of raw material prices.
9. The above analysis also shows that all the respondent unit holders i.e. 40 (100%) reported, that inadequate and irregular supply of power is the major hindrance to their efficient working.

Chapter – 6
Summary and Conclusion

Wood based industry is considered to be one of the most important industrial activities. It is the industry that utilizes various woods such as Willow, Poplar, Mulberry, Walnut etc. for its raw material and carries out its mechanical and chemical treatments. The industry produces sawn woods, ply woods, matches, furniture, and sports goods. In the present study, however, four major wood based industries have been analyzed i.e. Shook manufacturing industry, furniture industry, ply wood industry and cricket bat manufacturing industry. Further a comprehensive analysis of costs and returns to make an assessment of status and viability of cricket bat industry has been under taken in the present work. The present work has been conducted using appropriate methodological frame work in line with the topic, objectives and hypotheses formulated. Following are main observations:

1. While analyzing the performance of shook manufacturing industry, it is observed that during 2001-02 to 2010-11, this industry has not witnessed an impressive increase in the number of units, while as in terms of employment, production and sales, the industry has registered almost 100 percent increase with respect to 2001-02. This is reflective of the fact that increase in employment, production and sales has been due to the expansion of the productive capacity of the existing units. Expansion of the productive capacity has mainly been driven by increasing demand for shooks to keep pace with increasing apple production in valley.
2. As for as the performance of furniture manufacturing industry is concerned, during 2001-02 to 2010-11 this industry has registered a constant growth in terms of number of units and employment, while in case of production and sales, the industry witnessed impressive increase by four times and eight times respectively. Although in absolute terms sales in each year during the above period has lagged behind the production.

3. In case of plywood industry during the reference period although the number of units have remained almost constant, but employment has expanded by about four times with respect to the base year i.e. 2001-02. Similarly this industry has witnessed an increase in production and sales by six times and eleven times respectively.
4. As for as the performance of cricket bat manufacturing industry is concerned, the industry has impressive reputation of manufacturing cricket bats, which were exported. It is observed that during 2001-02 to 2010-11, the industry has witnessed remarkable increase in number of units by about 77 percent, employment by about 263 percent, production by 44 percent and sales by 189 percent.

Field study

While studying the cost and return analysis of cricket bat industry in District Anantnag, a well structured questionnaire was administered among the respondents selected on random basis. Following are the major findings:-

1. As for as education of respondent unit holders is concerned, majority of the unit holders fall in the category of higher secondary education i.e. 40 percent.
2. More than 90 percent entrepreneurs fall in the working age population of 18-60 years. There is no women participation in this industry.
3. The analysis shows that about 87 percent of the enterprises have sole proprietor type of ownership; no enterprise was reported operating on leasehold arrangement.
4. It is observed from the data that 75 percent unit holders were with an experience of holding the units for more than 10 years.
5. As for as the cost structure of cricket bat manufacturing industry is concerned, raw material cost component per bat is the most expensive item in the manufacturing of cricket bats. On an average, raw material cost constitutes about 50 percent of the total cost. The cost of raw material however, varies with the size of investment. It was found to be highest in case of large investment unit holders, accounting for Rs 108.33, followed

by medium size investment unit holders accounting for Rs 106.81 and is lowest in case of small investment unit holders, accounting for Rs 103.57. The reason for increase in the raw material cost per bat with the increase in size of investment is that, because average annual raw material consumption increases with the size of investment.

6. Labour cost is the second largest major component of cricket bat manufacturing industry which on an average, accounts for 13.46 percent of the total cost. The labour cost per bat increases with increase in size of investment. This cost however, is highest in case of large business units, accounting for Rs. 28.40 per bat, followed by medium business units accounting for Rs 28.10 and is lowest in case of small business units i.e. Rs. 26.57 per bat. The reason for lowest labour cost in smaller units is that these units are employing the family labour along with hired labour. Further, these small size unit holders are able to keep close watch in their business affairs, which adds to their efficient management.
7. Other costs including expenditure on handle, thread, grip constitutes third major cost in the manufacturing of cricket bats, which on an average accounts for 10 percent of total cost. This cost however, is highest in case of small investment unit holders i.e. Rs 23.5, followed by medium investment unit holders accounting for Rs 20.38 and is lowest in case of large investment unit holders i.e. Rs 18.66. The reason is that large investment unit holders directly purchases items like grips, thread, fevicol etc from wholesalers.
8. Rental value cost component per bat is the fourth major input in the manufacturing of cricket bats constituting about 9 percent of the total cost. It has been found that rental value decreases with increase in size of investments due to increasing tendency of average production with increase in the size of investment.
9. Transport cost is the fifth major input of the cricket bat manufacturing industry, which on average accounts for about 7 percent of total cost. It was observed that transport cost per bat remains almost same i.e. Rs 14 in

case of small and medium size unit holders. However, this cost per bat is lowest in case of large size unit holders i.e. Rs 13 because these unit holders have their own means of transport.

10. Repair and maintenance constitutes a minor cost proportion accounting for only 0.36 percent of the total cost.
11. Out of the three categories viz i) Unit holders with investment less than Rs 20 lacs ii) Unit holders with investment between RS 20-40 lacs and iii) Unit holders with investment more than Rs 40 lacs, total cost component per bat, category wise is found to be highest in case of the business with investment less than Rs 20 lacs i.e. Rs 215.43, followed by medium investment unit holders i.e. Rs 209.47 and is lowest in case of the unit holders with investment more than Rs 40 lacs, accounting for Rs 207.79. The inferences drawn from the above analysis is that cricket bat manufacturing industry is subject to increasing returns to scale.
12. The average gross and net returns increase with the increase in level and size of investment unit holders.
13. Gross returns per rupee of investment was found to vary between the unit holders, with the Rs 2.64, Rs 2.62 and Rs 2.55 for large, medium and small unit holders.
14. Net returns per rupee of investment was found to vary between the unit holders, with the Rs 1.64, Rs 1.62 and Rs 1.55 for large, medium and small unit holders.
15. The analysis shows that 37.5 percent unit holders face the problem of adequate quality of raw material and 62.5 percent of unit holders are facing the problem of higher price of raw material.
16. The above analysis also shows that all the respondent unit holders i.e. 40 (100%) claimed, that inadequate and irregular supply of power is the major hindrance to their efficient working.
17. The analysis shows that the output elasticities of labour and capital are 0.9752 and 0.3424 respectively. In other words, holding the capital input constant, a one percent increase in labour input leads on the average to

about 0.97 percent increase in output. Similarly, holding the labour input constant, a one percent increase in capital leads on the average to about 0.34 percent increase in output.

18. From the statistical view point, the estimated model fits the data quite well, the R^2 – value of 0.64 means that about 64 percent of the variation in the output is explained by the labour and capital.

19. Adding the two output elasticities, we obtain 1.3176, which gives the value of “returns to scale” parameter. Therefore it can be said that, output is characterized by increasing returns to scale.

The cricket bat industry has a great potential of development as the product made out of the Kashmir willow enjoys a good reputation in national and international market. In order to tap this vast potential it is important to provide the support to the local bat production units in terms of; assured quality raw material, testing facilities during production stage, providing information regarding the state of production etc.

Problems faced by cricket bat industry

However, this industry is facing certain problems which were observed during our field survey. These problems related to the following aspects:

- Raw material problem in terms of inadequate supply and higher prices.
- Machinery and production in terms of lack of updated technology and efficient production.
- Products and Marketing in terms of lack of access to foreign markets.
- Frequent power breakdown.
- Infrastructure. Sports goods complex occupied by security forces.

Suggestions

To overcome these problems following suggestions are recommended:

- i. The Government should ensure that the ban on trade of willow clefts outside state is implemented in letter and spirit.
- ii. Restrict sale of semi finished cricket bats to other states.

- iii. Relax the import policies and duties for import of cane handles/cane sticks along with rubber.
- iv. Give incentives for export of value added products.
- v. Ensure a steady power supply and communication facilities.
- vi. Facilitates in technology up gradation and development of marketing access.
- vii. Set up a demonstration plant for cricket-bat manufacturing with all the latest technical know-how and machinery.
- viii. The State and Central Government should take active steps to launch pilot project for growing willows to sustain the cricket bat industry in future. The stronger links between conservation and utilisation will contribute to the future of the willow cricket bat industry.
- ix. The ecological balance and landscape development can be made by the intervention of the government.
- x. There should be evacuation of security forces from the Sports Goods Complex Bijbehara.
- xi. The govt. should set up a seasoning plant for drying of willow clefts with latest machinery and technical know-how.
- xii. Awareness on quality improvement through seminars, workshops and other orientation programme.

To sum up it is evident from the analysis that cricket bat industry is highly profitable venture. There is a huge gap between demand and supply both at the local and national level. However, this industry has not been able to export the products outside the country due to lack of sophisticated technology and know-how. The state government needs to initiate urgent and serious efforts to overcome the various problems encountered by the business community. To encourage a large scale production by involving more educated youth towards this sector, government needs to develop an appropriate investment climate by providing the incentives. However, the government must also take necessary steps to maintain the ecological balance by developing appropriate linkage between conservation and utilization of willow plantations.

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Questionnaire

1. Personal identification

Name of the Block: - ----- Name of the Village: - -----

Name of the Unit: - ----- Name of the Unit Holder: - -----

Age----- Proprietorship: - Leased/ owned/joint/single
Educational Qualification: - primary/ sec./hr.sec/ graduate/P.G/ any other/
Illiterate.

2. Registration process

Is the unit registered with state government as small scale unit: - YES/NO
Year of Registration----- Date of commencement of business-----

3. Financial components

Has the unit holder approach any financial int. /Govt. for assistance:-YES/NO
Amount sanctioned (Rs) ----- Date----- Amount disbursed (Rs) -----
Interest rate ----- Amount liquidated-----
Outstanding-----

Monthly installment

a) Principal amount----- b) interest amount----- Total-----

Any kind of incentive provide by government:-YES/NO

If yes, which incentives-----

Has there been any problem regarding finance as

a) Delay in the banks b) bribe c) approach to higher authorities

Any kind of subsidy a) Interest subsidy b) land and building c) any other

Amount of subsidy availed----- Date-----

Any kind of incentive provided by DIC; YES/NO

If yes what incentives-----

4. Employment

Number of employees working with the unit in previous year (2011):- -----

Nature of employment: - part time / Full time

Number of part time employees----- skilled----- unskilled-----

Wages paid:- monthly/daily skilled----- unskilled----- total-----

Educational qualification of skilled employee----- unskilled employee-----

Number of full time employees----- skilled----- unskilled-----

Wages paid:- monthly/yearly skilled----- unskilled----- total-----

Educational qualification of skilled employee----- unskilled employee-----

Number of working days in a week----- working hours in a day-----

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5. **Inputs used**

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6. **Fixed investment**

Land (kanals) ----- value (Rs) -----
Rental value(Rs)-----

7. **Machinery**

a) Band saw (qty) ----- value (Rs)-----
b) Planner (qty) ----- value (Rs)-----
c) Press (qty) ----- value (Rs)-----
d) Rage mall machine (qty) ----- value (Rs) -----
e) Kharad (qty) ----- value (Rs) -----
f) Heating machine (qty) ----- value (Rs) -----
g) Sander (qty) ----- value (Rs) -----
h) Chook handle machine (qty) ----- value (Rs) -----
I) Any other----- value (Rs)-----
Total value (Rs) -----
Life span of the machines (years) -----

8. **Building**

Quantity----- value (Rs) -----
Any other----- value (Rs) -----
Insurance charges annually (Rs) -----
Salary to managerial staff (Rs) -----
Kinds of taxes paid:- a) sales tax b) income tax c) any other
Amount of taxes paid (Rs) -----
Total value (Rs) -----

9. **Variable investment**

Raw materials used (annually) value in (Rs) 2011
a) willow----- b) Poplar----- c) Cane-----
d) Any other-----
Labor charges (Rs) -----
Fuel (qty) ----- value(Rs)-----
Power charges annually-----
Repair and maintainece charges (2011) (Rs) -----
Others (stikers, grips, thread, ragmal, polish)-----
Advertise and selling cost if any-----
Total (Rs)-----

10. **Production**

Number of products produced in a year(2011) (qty)----- Value (Rs)-----

High quality (qty)----- value(Rs)-----
 Medium quality (qty)----- value(Rs)-----
 Low quality (qty) ----- value(Rs)-----
 Total production (Rs) 2011-----
 Production during 2008----- 2009----- 2010----- (value in Rs)

11. Sales

Sales during last accounting year (2011) (qty)----- Value(Rs)-----
 High quality (qty) ----- value (Rs) -----
 Medium quality (qty) ----- value (Rs) -----
 Low quality (qty) ----- value (Rs) -----
 Total sales (Rs) 2011-----
 Sales during 2008----- 2009----- 2010 ----- (value in Rs)

12. Marketing

Does the production reach?

- a) Local District (qty)----- Value(Rs)-----
- b) Entire state (qty)----- Value(Rs)-----
- c) Outside state (qty)----- Value(Rs)-----
- d) Outside Country (qty)----- Value(Rs)-----

Has there been any kind of artificial restraints of middlemen as

- a) Whole sales b) Retails c) Any other

Does Govt. Help you in marketing the products:- YES/NO

Does the CFC (Sather) ease your work:-YES/NO

Has the unit sold its entire production YES/NO?

Has there been barriers of entry and exit of the firms in the market:-YES/NO

13. Problems

Has there been any kind of marketing problem: - Yes/NO

If yes specify -----

Is raw material a problem:-YES/NO

Are the raw material sources dependable with regard to

- a) Quality:-YES/NO b) Quantity:- YES/NO

- C) Delivery:- YES/NO d) Price;- YES/NO

Has the Production suffers because of

- a) Power break down b) power cut c) weeks lost due to labor trouble

Any other problem no mentioned above-----

What are the suggestions for improvement-----?