CHAPTER - II

PRODUCTION SYSTEM

INTRODUCTION

The crucial role that effective production systems play in modern society can hardly be over-emphasized. Modern civilization with all its attributes can not exist without its organised and complex production systems. In the words of Peter F. Drucker "The principles of production must be a serious concern of top management in any business that produces or distributes physical goods. For in every such business the ability to attain performance goals depends on the ability of production to supply the goods in the required volume, at the required price, at the required quality, at the required time or with the required flexibility". ¹

The word production is a wide as well as complex term. Different writers and scholars have defined the term production. A few definitions reproduced below give a fair idea as to what is meant by production.

Production systems have been commonly thought of as mechanisms for converting some sort of raw materials to something useful. According to Layman A. Kieth, production "means changing of raw materials into a finished good by some mechanical or chemical process".²

However, the meaning of the word production today reflects a broader view. Elwood S. Buffa, points out that production "deals with the operations side of any enterprise and we may find production system in offices, stores, hospitals etc. as well as in the factories."³ Similarly, Franklin G. Moore is of the opinion that production has to do with the production of goods and services and not just how a factory should operate."⁴ He further states that "Service organisations, mechanising companies, railroads, hospitals, insurance companies, government etc. all are engaged in production even though their end products are services and not physical products."⁵

From the foregoing discussion it becomes clear that production is an all pervasive and

5. Ibid.
comprehensive term. Production systems are involved, wherever, there are inputs, some kind of processing and outputs.

Nevertheless, for the sake of present discussion the term production is used in the specific sense of changing the raw materials into a finished product by some manual/mechanical processes.

With a view to highlighting the constraints and problems faced by the carpet industry in Kashmir, an attempt has been made in the present Chapter to examine the existing production system of the industry. In this connection various issues like volume of production, location pattern, organisational structure, production inputs and production processes have been discussed in detail. The main thrust of the chapter is, however, on the study of the production process itself, which involves designing, 'taleem' writing, dying, weaving, washing and finishing of hand-knotted carpets.

**Production of Carpets in J&K**

Production of hand-knotted carpets in J&K went up from Rs. 92.59 lakhs in 1973-74 to about Rs. 22.58 crores in 1982-83, in terms of value, indicating an increase of about 25 fold during this period. This
is revealed by Table 2.1 given below:

### Table 2.1

**Value of Carpet Production in J&K (1973-74 to 1982-83)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Value (Rs. in crores)</th>
<th>Annual Growth Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1973-74</td>
<td>0.92</td>
<td>-</td>
</tr>
<tr>
<td>1974-75</td>
<td>1.38</td>
<td>50.00</td>
</tr>
<tr>
<td>1975-76</td>
<td>1.97</td>
<td>43.47</td>
</tr>
<tr>
<td>1976-77</td>
<td>2.77</td>
<td>40.61</td>
</tr>
<tr>
<td>1977-78</td>
<td>5.47</td>
<td>97.47</td>
</tr>
<tr>
<td>1978-79</td>
<td>12.28</td>
<td>124.49</td>
</tr>
<tr>
<td>1979-80</td>
<td>17.67</td>
<td>43.49</td>
</tr>
<tr>
<td>1980-81</td>
<td>19.04</td>
<td>7.75</td>
</tr>
<tr>
<td>1981-82</td>
<td>19.60</td>
<td>2.49</td>
</tr>
<tr>
<td>1982-83</td>
<td>22.58</td>
<td>15.71</td>
</tr>
</tbody>
</table>

Source: Compiled by the scholar on the basis of the data obtained from the Directorate of Handicrafts, J&K, Srinagar.

Though the rising trend in the production of carpets appears to be encouraging when viewed in isolation, yet an assessment of it in relation to market situation during this period reveals that the rate of growth is much lower than what it should have been.
The share of J&K in the total hand-knotted carpet production in the country works out to a meagre 9.4 percent in 1978-79, compared to U.P where the percentage comes to a thrilling figure of 80. It is interesting to note that while other carpet producing centres have benefited a lot, consequent upon the gradual withdrawal of Iran from world market, Kashmir has not been able to exploit the opportunity open to it. China, which was a late comer in the world carpet market successfully pushed through its production and imports of hand-knotted carpets. All this proves that greater efforts are needed for expanding the production base of carpet industry in Kashmir.

LOCATION PATTERN

Carpet industry is essentially localised in Kashmir region of the State. In Jammu Division, it has not been able to make much dent as a result of which production is quite scanty there.

Even within the Kashmir division, the industry was till recently confined to Srinagar and its sub-urbs.

This urban character of the industry was the result of the following factors:

i) assured supplies of necessary inputs like skilled labour, capital, raw-material etc.

ii) availability of necessary infrastructural facilities in the field of production and marketing, and

iii) importance of Srinagar as the principal tourist centre.

It is a matter of satisfaction that both the Government and the manufacturers have now realised the limitations arising out of this concentration, like limited production base, high cost of labour etc. Accordingly, a policy of decentralisation and dispersal of the industry in the nook and corner of the State was initiated. This process of diffusion in the location pattern was facilitated by the Massive Carpet Weaving Training Scheme launched by various State and Central Government organisations. This has led to a significant change in the locational pattern of the carpet industry in Kashmir. Table 2.2 indicates the changes in the locational pattern of the industry during the period 1973 and 1978-79, for which the Census data is available.
## Table 2.2

<table>
<thead>
<tr>
<th>District</th>
<th>1973 No. of Units</th>
<th>% share in total</th>
<th>1978-79 No. of Units</th>
<th>% share in total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Srinagar</td>
<td>234</td>
<td>99.16</td>
<td>4,735</td>
<td>65.65</td>
</tr>
<tr>
<td>Baramulla</td>
<td>1</td>
<td>00.42</td>
<td>1,653</td>
<td>22.94</td>
</tr>
<tr>
<td>Anantnag</td>
<td>1</td>
<td>00.42</td>
<td>823</td>
<td>11.41</td>
</tr>
</tbody>
</table>

Total 236 100.00 7,211 100.00

Source: Compiled by the scholar on the basis of following sources of data:
1) Report on Handicrafts Survey, 1973

The above table clearly reveals that in 1973 99.16 percent of the total number of carpet units in Kashmir division were located in Srinagar District while as only 0.42 and 0.42 percent were in the Baramulla and Anantnag Districts respectively. As against this, according to the Handicraft Census 7.

7. It should be noted here that this classification of Districts pertains to the year 1973 and 1979, when there were only three districts in the Kashmir province of the State, Baramulla, Anantnag, and Srinagar.
of 1978-79, the percentage share of District Srinagar was reduced to 65.65, while as the percentage shares of Baramulla and Anantnag Districts went up to 22.94 and 11.41 respectively.

It becomes thus abundently clear that the locational pattern of the industry has undergone a substantial change. Although similar figures for the recent years are not available, but it can safely be concluded that the process of decentralisation in the locational pattern of the industry was further accelerated, during the last few years, as a result of the Massive Carpet Weaving Training Programme. It has been estimated that more than 50 percent of the total number of carpet units are located in the rural areas of the State, at present. A matter of satisfaction to note is that the geographical dispersion had positive impact on the development of the industry. It has not only broadened the production base of the industry but also ensured the supply of ample and relatively cheaper labour force. Hence the carpet manufacturers have started shifting their attention from urban to the rural areas.

8. Based on field investigations by the scholar.
Decentralised production is not a wholesome blessing. It also suffers from some inherent weaknesses. In the case of carpet industry, it has given rise to problems of co-ordination and control of quality and quantity of carpets. To overcome this situation, it is suggested that the Government should provide adequate guidance and facilities to carpet weavers in different areas, in respect of designs, washing and marketing etc.

**ORGANISATIONAL STRUCTURE OF PRODUCTION**

The activity of carpet weaving is remarkably fragmented and unorganised in the valley of Kashmir at present. Historically speaking, before 1947, the industry was mainly organised in the form of few large sized factories like M/s C.M. Hadow and Co., M/s Mitechell and Co., and East India Carpet Co. etc. However, after 1947 the factory system of production gradually declined and the share of household and cottage sector increased, as is revealed by the Table 2.3.

It becomes evident from the table that the share of household units in the total number of carpet units has increased from 64 percent in 1973 to 87 percent in 1978-79. Similarly the share of Non-household sector has decreased from 36 percent to 10 percent in this period.
Table 2.3


<table>
<thead>
<tr>
<th>Type of Unit</th>
<th>1973 No. of Units</th>
<th>% share in total</th>
<th>1978-79 No. of Units</th>
<th>% share in total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household</td>
<td>150</td>
<td>64</td>
<td>6272</td>
<td>87</td>
</tr>
<tr>
<td>Non-household</td>
<td>36</td>
<td>36</td>
<td>721</td>
<td>10</td>
</tr>
<tr>
<td>Work Centre</td>
<td>-</td>
<td>-</td>
<td>218</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>236</strong></td>
<td><strong>100</strong></td>
<td><strong>7201</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: Compiled by the scholar on the basis of data obtained from following two sources:
  i) "Report on Handicrafts Survey 1973"

This new trend in the organization of carpet production is healthy in several respects, but it also poses certain problems. A brief examination of the three main forms of organisation, viz:

a) Household
b) Non-household and
c) Work Centre

is presented in the following paragraphs.

a) **Household Sector**

The Handicraft Census of 1978-79 defines the terms "Household", "Unit" and "Household Unit" in the following words:
i) Household "The household for the Census was taken as a group of selected persons living under a common roof, pooling their income and resources together and taking their meals from a common kitchen".

ii) Unit- "That it has its own investment for manufacturing of goods and that it turns out finished goods".

iii) Household Unit - "It is the unit which is engaged in any economic activity within the residents houses".

Thus from the above definitions it becomes clear that Household unit is synonymous with a cottage unit of production. It has been already pointed out above that the share of household units in the total number of carpet units is increasing at a fast rate. The positive aspects of this trend are mentioned below:

I. The Weavers feel at ease in working within their houses,

II. The overhead expenses of factory maintenance are avoided.

III. stops the migration of weavers from village to city.

IV. family members of the weaver also assist him in his work.

However, the cottage system of production has also posed the following problems:

I. The weavers generally lack the information about the proper designs and colours,

II. Their financial resources are generally very weak,

III. They face the problem of marketing their production and are compelled by the circumstances to sell their carpets to the Merchant-Exporter or Brokers at a very low margin.

Non-household Units:

The Handicraft Census of 1978-79 defines a Non-household Unit in the following words:

"An enterprise where the economic activities are carried out at other than the residential houses."

Thus Non-household sector includes big factories and small 'Karkhanas'. There are about 30 well organized establishments engaged in the manufacture of carpets in Srinagar. In this way out of the total 721 Non-household units of carpet weaving in Kashmir, the remaining about 690 units fall in the category of small 'Karkhans' or workshops. As already pointed out the share of Non-household sector especially factories in the total number of units is fast declining. The main reasons responsible for the decline of the factory system of production are given below:

i) The entrepreneurs want to avoid the rules and regulation of the Factories Act and other relevant laws,

ii) the overhead costs are high and hence the cost of production goes up,

iii) the threat of the organized labour force and

iv) workers tendency to work independently at their homes.

Inspite of the above reasons factory system still offers the following advantages:

i) the quality of the production is strictly maintained,

ii) production schedules are implemented in a better way,

iii) the workers receive better facilities under Factories Act etc, and

iv) the task of supervision and training of workers becomes easy.

However, at present the factory system is declining. The existing few well organised factories are mostly located within the municipal limits of Srinagar. These factories are generally specialized in the production of fine quality silk carpets. Most of the big manufacturers and merchant exporters maintain their factories in Srinagar for demonstration and exhibition purposes as well.

Work Centres

The Handicraft Census of 1978-79 defines the term 'Work Centre' in the following words:

"Craftsmen either functioning individually or forming small groups of workers on wages without having their own investment and marketing of
finished goods. These units function under the supervision of Master Craftsman/Head-Craftsman whose activities are carried out on behalf of entrepreneur/proprietor. The census of 1978-79 reveals that the number of these Work Centres is gradually increasing. The looms installed in the cottages by the weavers in the rural areas are either owned by the weavers or owned by the merchant exporters. Such weavers are usually engaged more or less on permanent basis for manufacturing carpets by the merchant exporters/manufacturers who have invested in looms. These looms are attached to the investing manufacturers. The weavers are supplied with the copies of design taleem and raw materials and are paid wages by the manufacturers on piece-wage basis.

In operating this way, the manufacturers enjoy following advantages:

i) Fixed capital requirements, for factory space are eliminated.

ii) production in the 'Put Out' system is paid for strictly on the basis of productivity.

iii) managerial problems of dealing with organized labour in a single work place are avoided, and
iv) the obligations imposed by the Factories Act are avoided.

However, the work centre system suffers from the following disadvantages:

i) The administrative problems of supervising the diversified production centres have become difficult,

ii) An element of exploitation of workers is undoubtedly implied in the avoidance of the Factories Act and payment of minimal wages,

iii) Sometimes the weavers also cheat the 'Karkhanadar' by selling the finished carpets to a third party for ready cash which gives rise to many disputes and even litigation.

**MANUFACTURING PROCESS**

Manufacturing process is the core aspect of the production system of an industry. It is the process through which the various production inputs like design,
raw material and labour are converted into production outputs, in the shape of finished goods or services which are ultimately required for satisfying the needs of consumers. The production process gives rise to a number of problems, especially in case of handicrafts product like carpets.

To sum up, the production process of a handmade carpet in Kashmir involves the main steps, depicted by the following Diagram:

The above diagram shows that carpet manufacturing is a complicated and lengthy process. All these operations are manual in nature and require lot of time.
The first step in the production of a carpet is the preparation or procurement of a design. The professional carpet designers prepare a detailed depiction of the design, on a large graph paper, each small square of which represents an actual knot on the loom. Next the design is converted into the 'taleem', which is a coded written form of design indicating the number and colours of knots.

Simultaneously the manufacturer has to procure the required raw materials like cotton, woollen and silken yarn etc. from the market. After this the manufacturer has to arrange for the dying of wool/silk yarn into different colours as specified by the design. Only professional dyers perform this task in their own homes.

Next step is to prepare the warp for the carpet from the cotton/silk yarn as per the requirements of the proposed carpet. Then starts the actual process of weaving, which is nothing but the knotting of the woollen or the silken yarn on the cotton/silken strings to form the weft. This task is performed by the carpet weaver.
Once the weaving activity is over, the carpet is sent to specialized washers for washing purpose, which adds sheen and lustre to it. The washed carpet needs some time to dry. The last step in the process is the clipping of the carpet, which involves the stitching of the carpet sides, smoothening of carpet surface and straightening of edges etc.

With a view to identifying the bottlenecks in the production system, a detailed examination of the various production inputs and operations is made in the following lines.

Design Development

Design constitutes the main characteristic of an oriental carpet. The aesthetic and artistic value of a handmade carpet depends on its design and colour combination. Manufacturing process of a carpet starts with the preparation or procurement of a design. In case of Job Order production the design is specified by the customer and only the copies of the design are prepared by the designer. However, in case of the production for stock, the choice of design depends upon the manufacturer. The professional carpet designers prepare a detailed depiction of the desired design on a large graph paper, each small square of which represents
an actual knot on the loom. The map making, which also involves the creation of a new design, is a specialized job, done by experts and no machinery for map making is used. The designer also fixes colours for the 'Naqsha' which ultimately appears on the carpet.

Design Development in Kashmir Carpets

Historically speaking, Kashmir carpets are of mainly Persian origin. Therefore most of the designs are Persian in nature. Following are the three main categories of designs found in Kashmir.

a) Persian designs,
b) Other Oriental designs, and
c) Local Kashmiri designs.

a) Persian Designs

Persian carpets have been the most popular of the oriental carpets. When most people think of an oriental carpet, they visualise only the Persian carpet and think of it as having only the Persian design.

In general the Persians prefer a floral to a formal design and a graceful curve to a geometric pattern. In the words of Charles W. Jacobson,
"The Persian's love of flowers and gardens is often depicted in his weaving, in the form of compartment carpets and other designs believed to represent their carpets."

Persian carpets are par excellence for their superior workmanship, subtle colour schemes and fine designs. The rather small traditional motifs are based on natural forms as flowers, trees, vines, birds, rivers and clouds. These exquisite designs express something more than the Persians' appreciation of the beauty of the nature surrounding him.

A Persian carpet can be first of all recognised by the great freedom of form, its construction and decorative imagination. Among the best known Persian designs are Bijar, Feraghān, Isfahan, Kashan Kirmanshah, Saraband, Sarook, Tabriz, Shiraz etc which/actually names of some cities of Iran.

According to Robert de Calatchi, "Persian designs include innumerable variations of floral motifs sheilds of foliage, palmettes, skill arabesques, gardends, fantastic or legendry animals and figures, of all kinds, treated generally in a figurative manner and with great difficulty contained within the architectural limits of the design."

Impact of Persian Designs

Due to historic reasons and the climatic similarities between Iran and Kashmir, Kashmir carpets have been heavily influenced by the Persian designs. Even the names of most of the designs of Kashmir carpets have been borrowed from Iran, like Shiraz, Kirman, Faraghan, Qum etc. At present most of the carpets manufactured in Kashmir are exact replicas of the original Iranian designs. These include hunting carpets, foliage/portrait carpets, garden carpets, vase carpets and carpets with flowering shrubs.

b) Other Oriental Designs

Besides Persian designs, many other oriental designs are being used in Kashmir carpets. These include the geometric and formal designs of Turkish, Turkoman, and Central Asian Carpets. Kashmir has been inclined to receive Central Asian influences on the one hand and the ancient symbols of the Indo-Asiatic art on the other. The ideal fusion of both is visible in Kashmir carpets, while applying Aryan symbols like circle, zigzag, and tree of life with Central Asian
medallions, hunting scenes and polo players. However, at present only a small fraction of the carpets manufactured in Kashmir follow this category of designs.

c) Local Designs

In addition to reproducing the Persian, Turkish, Turkoman and Cacassian patterns, carpets have been made with Kashmiri designs. This is an innovation on the part of Kashmiri designers. In the early sixties of this century carpets with 'Amlikar Shawl' patterns were introduced and one of such carpets was presented to Her Majesty the Queen of England by Government of India.

Previously the Kashmir carpets were mainly designed on persian designs but at present, carpets having even 600 knots in a square inch with purely Kashmiri designs are being manufactured. These include carpets depicting the life stories of the legendry personalities, historical places and events, famous and interesting folk tales, philosophy of human life etc. The specific examples of these designs are,


A recent trend in the designs of Kashmir carpets is the modification of the Persian designs. Thus a blend between the Persian and Kashmiri designs has been obtained. Some of such successful designs include:

'Quom Bakhtiar'
'Balance Qum'
'Neelam'
'More Dur'
'Nan Kashan'
'Aziz Kashmiri'

Dearth of Designers

However, by and large most of the designs and patterns in Kashmir carpets are imitations of the Persian designs. The local designs and modifications are not so impressive and successful. This is one of the reasons that Kashmir designs do not possess any distinguishing identity of their own.

The main cause of this slow design development is the extremely small number of skilled designers
available in the valley as compared to large volume of carpet production. On the basis of this study it has been estimated that there are hardly twenty five to thirty skilled carpet designers in the whole valley of Kashmir available at present. The number of competent 'taleem' writers is also approximately same. The skill of carpet designing has remained a family inheritance from father to son.

It seems that Government has not given proper attention to the training and development of carpet designers, as compared to the training of carpet weavers. The manufacturers thus face acute problem of the dearth of competent designers.

Role of the School of Design:

Although a School of Designs, catering to the requirements of not only carpet industry but also other crafts is already in existence at Srinagar, exporters and manufacturers have expressed their dis-satisfaction with the present arrangements. It has been observed that the concept of oriental carpet designs has not been properly conceived by the School of Designs. Therefore the designs produced by the School do not fulfil the requirements of the carpet industry. Besides, the School of designs is not in close touch with the local
industry and the foreign markets. Hence it is working as an institution for itself.

With a view to making the School of Designs an effective instrument for improving the traditional designs and also for the overall development of new designs, the following suggestions need to be kept in view:-

i) Special arrangements should be made for increasing the number of skilled designers. For this purpose the Government and the industry should jointly make the efforts. Training programmes should be arranged for selected youngmen with suitable education and aptitude for the job in the School.

ii) Trainee designers should be attached with the various leading carpet manufacturers of the State for some period as apprentices, so that they can receive the practical training. In fact most of the manufacturers are ready to cooperate in this behalf.

iii) The School of Designs should be reorganised and reoriented in the light of the past experience. The emphasis in the carpet designs should be on the oriental designs,
instead of modern and abstract art. The innovations and modifications in the designs should be in the direction of classical oriental designs because for the customers a hand-knotted carpet is a symbol of the orient.

iv) The gulf between the School of Designs and the industry should be bridged by establishing close contacts between the two. Similarly, the link between the tastes of the carpet customers and the skill of the designers could be maintained by arranging market tours for designers.

v) A further function of the School of Designs should be to collect traditional Persian designs from competing sources and display the same. In particular a number of fine Iranian and Pakistani carpets may be on permanent display.

vi) The carpet designers should fully be acquainted with the history, philosophy, techniques of production and market tastes for the carpets. This

will provide them a proper background for the development of their skill. To begin with, it is suggested that a few designers should be sponsored by the State Government for being trained in Iran. To cut down expenses later on some of them could be appointed as head designers and the training activities could be undertaken in the State itself.

**TALEEM WRITING**

The technique of Kashmir's carpet weaving differs from the rest of the world in one respect and that is the application of a heiroglyphic language of the design representing the knottage and colour scheme to be woven in the carpet. There is a separate class of Script Writers, who are proficient in transforming the design into the language for knottages and the weaver has the knowledge to read it while moving his hands quickly.

As to the origin of this technique, the history reveals that in 1848, the Sikh Government was succeeded by the Dogras and the concentration was wholly on 'Kanishawl' industry at that time, on which the economy of Srinagar was dependent. However, as a result of the heavy burden of taxes imposed by the Sikh Government on the Kanishawl industry and the subsequent market depression

most of shawl weavers switched over to carpet weaving and introduced the 'Taleem' technique from shawl weaving into the carpet.

Kashmir, thus became the only place in the world where carpet design is converted into a coded written form known as 'Taleem'. In rest of the carpet producing areas, the weavers directly copy the original design on the graph paper.

Availability of Taleem Writers.

Like designers, there is extremely small number of Taleem Writers available in the State. The total number of trained Taleem Writers is not more than 1925 to 30. Manufacturers face difficulties on account of the dearth of competent Taleem writers. Besides a large number of copy writers is required for making the true copies of various scripts, in order to manufacture more than one piece of a particular design.

Desirability of 'Taleem' method

The researcher has attempted to examine the utility of this technique critically. Most of the writers on the Kashmir carpets have highly praised it as a unique innovation. However, a detailed examination reveals 19. Based on field investigation by the scholar.
a number of its dysfunctions, some of which are mentioned below:

i) Conversion of design into 'Taleem' is a time consuming and costly process. For example one taleem writer can write only 250 alchies in a day. Thus for a design of the size of 4 feet x 6 feet, conversion into taleem takes roughly 8 months.

ii) The artistic, innovative and creative instinct of the weaver is suppressed in this method. The weaver does not know in advance, what he is exactly going to manufacture and he has to strictly follow an abstract set of symbols and codes, without any chances of creativity. That is why most of the carpet weavers in Kashmir complain about the problem of job dis-satisfaction and the monotany.

iii) There are frequent chances of leakages in the Taleem method. The weavers pass on the script to other manufacturers for copying purposes, because the copying is so simple in this

20. Based on field investigation.
method. Thus mass production of similar designs destroys their charm and marketability.

The above analysis reveals that the 'Taleem' method does not help in any way in improving the quality and productivity of the carpets. The fact that Iranian weavers do not use 'Taleem' and still Iranian carpets are considered to be the finest in the world, clearly demonstrates that 'Taleem' method does not add anything to the artistic value of a carpet. The researchers of the International Trade Centre, Geneva, in one of their recent surveys of the world carpet industry have also made the similar remarks, regarding the Taleem method used in Kashmir. "Productivity should be improved by eliminating 'taleem' and training workers/weavers to work independently and direct from the 'naqsha' or design. The transformation of design into the sing-song chart (taleem) that tells the knotting team what to do is in itself time consuming and wasteful."^{21}

It is therefore, strongly recommended that the 'Taleem' method should be gradually replaced by the Direct Design method. In the beginning both the methods may be combined on experimental basis i.e, the weaver may

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be provided, both the 'Taleem' as well as the design. With the passage of time our weavers will become accustomed to copy directly from the design, without the help of 'Taleem'.

It is believed that the proposed change will not only increase the productivity and job satisfaction of the weavers, but also help in minimizing the time and cost requirements in carpet manufacturing.

**RAW MATERIALS**

After the preparation of the design and 'taleem' the next important step in the production of a carpet is the procurement of the raw materials. It is the single most important input into the production system of a carpet, except the labour. An industry can function effectively only when it can ensure the supply of right kind of raw materials, in desired quantity, at reasonable price and at required time. The quality of the finished product depends to a great extent on the quality of the raw material.

The primary raw materials which are used in carpet production are mentioned below:

I. Cotton yarn
II. Woollen yarn
III. Silken yarn
I. **Cotton Yarn:**

Cotton yarn is used as weft and warp in a carpet. Cotton yarn of suitable qualities is available in requisite quantities to the carpet weaving industry from indigenous sources and no problem is envisaged in ensuring adequate supplies of it. Cotton yarn is used as weft and warp for all types of woollen, silk based and silk touch carpets. It has been found to be suitable for this purpose, as compared to woollen yarn, because cotton yarn permits a more closely woven rug. However, for full silk carpets, even the weft and warp are constituted of silk yarn.

II. **Woollen Yarn:**

Wool is the chief material used in carpets, besides cotton and silk. Wool obtained from the sheep is by far the most used fibre in carpet making. The quality of an oriental carpet is based primarily on the quality of the wool used in it. The basic qualities of a good carpet wool are that it should be lofty, lustrous, white, strong and long. Besides, it should also give a good coverage to tufts to avoid crushing and matting of the surface.

Few decades back, most of the carpets made in Kashmir used to be only woollen carpets. But now the
share of woollen carpets is gradually decreasing and only about 30 percent of the carpets manufactured are all woollen at present.  

Today all the carpets in Kashmir are produced with machine spun yarn. Previously Kashmir used to utilize its own resources of raw wool. Some fine quality wool was also imported from the Central Asia through the old silk route. But now the local production of wool suitable for the carpet manufacturing is negligible. Therefore, almost all the machine spun yarn comes from other states of India.

**Quality of Wool**

The quality of wool available in the market and which is used in the manufacturing of carpets is not of very high quality. It lacks the characteristics of good carpet wool. The semi-worsted woolen yarn, though relatively better and more suitable for the production of superior quality carpets, particularly of Kashmir type is somehow restricted in its use, because it is costlier.

22. Based on field investigations.
It is widely recognised and accepted that superior quality carpet yarn could be produced by blending some of the Indian wools with imported wools, particularly New-Zealand wools.

Considering the advantages of blending indigenous wools with New Zealand wools, it would be helpful to import such qualities of carpet wools to ensure sustained availability of superior woollen yarn. Imported New Zealand wools blended with the indigenous varieties in the ratio of 70:30 and 60:40 would produce superior quality semi-worsted yarn, which is most suitable for Kashmir carpets. These carpets would be more springy, lustrous and durable.

It is thus obvious from the foregoing analysis that the hand-knotted carpet industry is facing the problem of non-availability of suitable grades of woollen yarn.

As a short term solution to the above problem, imports of New Zealand carpet wools may be allowed so that the available quantum of indigenous raw wools could be appropriately blended with New Zealand wools in order to obtain a better quality raw material.


In view of the necessity of assessing continual supplies of woollen yarn of desirable qualities to the carpet weavers, and of the fact that the domestic production of carpet wools is low and would take a considerable time to improve, it is suggested that imports of raw wool be allowed duty free exclusively for the benefit of hand-knotted carpet weaving sector. Such a measure would constitute an important ingredient in the plan for development of carpet industry and contribute to the faster development of the industry and would attract more people to take up to carpet weaving. Besides it would help the wool combing and yarn industries in the State in improving their capacity utilization and their blending techniques.

This however, is only a short-term solution to the raw material problem. The long term solution lies in improving the domestic production of wool on a regular basis. In this connection special efforts should be directed to the development of proper quality of carpet wool within the state of Jammu and Kashmir. If the locally produced woollen yarn is made available to the carpet industry, it would enable the carpet manufacturers to save the transportation costs from the outside State into the State. Presently, the manufacturers have to incur the higher freight costs on the woollen
yarn as compared to their counterparts in Mirza-pur Bhadroi and Amritsar etc. Thus Kashmir manufacturers are put at a disadvantageous position.

II. Silk Yarn

Silk is one of the most important items of raw materials used in the manufacture of Kashmir carpets. In fact Kashmir is the only place in India which produces silk carpets of very high quality. The requirements of the industry for silk yarn have increased tremendously over the last one decade or so. Presently, more than 55 percent of the total requirements of raw material in the carpet industry constitute of silk yarn.

Availability of Silk Yarn

The silk yarn available in the market comes from the spun silk mills of Bihar, Assam and Karnataka.

Quality of Indigenous Silk

The silk available in the market is not actually as such suitable for the carpet weaving. It is of the thickness of the silk yarn used in the making of sarees. Manufacturers complain that they have to ply it 7 to 8 times in order to use it for making the 18x18 knot per square inch quality of silk carpets.

25. Based on field investigations by the scholar.
Import of Chinese Silk Yarn:

It is reported that the Chinese silk yarn is far better than the indigenous silk. But it is very difficult for the individual manufacturers to obtain this silk. It is suggested that the Government should entrust the task of procuring the imported Chinese silk to some agency and the same should be sold to manufacturers on quota basis at controlled rates. This task could also be undertaken by the Association of Carpet manufacturers or Handicrafts Directorate.

Development of Local Production of Silk

As a long term solution to this problem, the Government should develop the local silk yarn industry. Kashmir has got the enormous potential to develop the local silk yarn for carpets. But unfortunately the industry is in doldrums these days. Concrete efforts should be made to increase the production and quality of silk yarn required by the carpet industry.

Establishment of a Spun Silk Unit in the State

Industries Department may also look into the possibility of setting up of a small spun silk mill in the State. Presently there are only three public sector units in the country viz. Govt. Spun Silk Mill,
Karnataka: Assam Spun Silk Mill, Assam; and Bihar Spun Silk Mill, Bihar. The total installed capacity of the spun silk industry is 13,500 spindles and the average production is in the vicinity of 90,000 kg. per annum. As reported by Kashmir Chamber of Commerce and Industry, total requirements of spun silk yarn in Kashmir alone is estimated to be around 40,000 kg. 

Experience regarding the supply of silk yarn from the existing mills hitherto has been none too happy since the demand for full quantum of raw material was not met. Hence there is need for setting up of a small unit in the State.

There are several advantageous factors which go in favour of establishment of a spun silk mill in the State, some of them are listed below:

1. Silk waste which is basic raw material for the production of spun silk is available in the State. Total quantum of waste locally available is estimated to be 70,000 kgs per annum.


27. Ibid.
2. Material when procured from Karnataka is normally air lifted and the transportation cost from the place of origin to Srinagar is about Rs. 5.00 per kg., which is fairly substantial.

3. There has been marked technological development in the sphere of silk industry during recent years. These technological developments have not flown down to some of the existing spun silk mills which are operating with obsolete machinery, resulting in higher cost of production. Proposed unit in the State can easily imbibe these technological developments and organise production with machinery imported from Japan, resulting in higher productivity at a lower cost.

4. Since the proposed unit is to be established in the State, (a declared backward region) it will generate more employment opportunities.

5. There is ready consuming industry within the State itself. Proposed unit will not normally face any marketing problems.

6. In the event of slackening of local demand the unit could even branch off into export marketing since there is primafacie evidence indicating considerable demand for this item in international market.

Establishment of Raw Material Banks

It was observed that one of the factors seriously restricting the industry's efforts to manufacture quality carpets is the non-availability of woollen and silk yarn of desired specifications at reasonable prices.

This problem is found to be more serious in case of tiny units as they are not in a position to secure sufficient amounts of working capital to purchase and stock, at a time, adequate quantities of woollen and silk yarn.

In order to accelerate the pace of the development of the industry in the small scale and cottage sector, it is recommended that the State Government, through the Directorate of Handicrafts, may open 'Raw Material Banks'. In other words, the Directorate may pool the raw material requirements of

the tiny sector units and procure the same in bulk quantities directly from the manufacturers and stock it for supplying the same to tiny units at cost price as and when required by them.

**DYEING OF YARN**

After procuring the required type of raw material, the next stage in the production process of a carpet is the dyeing of woollen/silken yarn into different colours as per the specifications of the design.

There are about 50 dyers undertaking the work of dyeing at small scale level in Kashmir. They prefer to use dyes produced by reputed companies like I.C.I. and Sandoz. It is stated that good quality chrome mordant dyestuffs for medium to deep shade and 2:1 metal complex dyestuffs for light to medium depths are being used by the carpet industry for dyeing woollen and silk yarn.

However, many of the dyeing units are small by nature and follow crude and conventional methods of dyeing. Consequently they do not pay much attention to various factors essential for quality dyeing such as pre-scouring, dye stuff selection, wet and catalytic fading, quality of the water used for dyeing,
temperature control, dye bath additions etc. Old crude method of dyeing is still prevalent where in direct fire is used to copper vat containing dyes, acid and yarn. In the absence of any control on temperature of dye bath, fibre, is likely to be attached by dye molecules resulting in unevenness of dyeing on yarn.

Kashmiri dyers owing to their small scale operations are reported to be capable of dyeing only fifteen kgs. of yarn in a single lot. Exporter/manufacturer is put to difficulty when a big order of uniform design and colour combinations is received by him. He, perforce, has to get his yarn dyed in several batches. The yarn thus dyed may not be uniform and exporter finds increasingly difficult to fulfil the specifications of the big order.

Similarly the suitable packets of dyes are not available. Dyer is forced to use acid dyes which reflect on the quality of finished product.

Dyers face another problem that is dyeing of yarn during winter and monsoon season. At times yarn is supplied in semi-dried form. When the carpet is complete that after washing and drying it is found the colour is not uniform and the piece is liable to be rejected.
For producing chrome dyed washed carpets, dyestuffs like Omega Chrom Red G.M., Omega Chrome ME, Omega Chrome Blue BN, Sulphonis Brilliant Red 6B etc are needed. Their supply required quantities has to be ensured through liberal imports. It seems that there were times in the past when imports of dye stuffs of the above types were banned by Government. Bottlenecks like these should not be allowed to come in the way of increasing our exports of carpets in the coming years.

Besides most of the dyeing units in the carpet industry do not pay much attention to providing an after wash to the woollen yarn after dyeing. The yarn after dyeing is straight taken to hydro extraction and drying, without after wash. This practice does not help remove the unfixed colours and excessive chemicals, which, if not removed properly, would affect adversely the quality of dyeing.

It, therefore, becomes essential to improve the existing dyeing facilities. In this connection it is suggested that mechanized dyeing be adopted to improve the quality of dyeing. Nevertheless, this suggestion if implemented may displace a major portion of the existing

31. Ibid, P. 146.
dyers. But in the larger interests of the industry as a whole, it has become necessary to adopt these modern methods sooner than later. The existing manpower engaged in these activities, if displaced could be rehabilitated either in the carpet industry itself or elsewhere.

However, the establishment of the mechanized dyeing units are relatively costly and cannot be afforded by the existing dyers. It is, therefore, suggested that these facilities may be offered to the industry by the Government through a Common Facility Centre. Such a proposal is already lying with the Directorate of Handicrafts but for unknown reasons it has not been implemented.

It is, however, heartening to note that under the UNDP wool utilization and Development Project, a dye house for the woollen textile industry of the State has been recently established at Nowshehra, Srinagar. This dye house can also dye the yarn of carpet industry. But the problem is not going to be solved by this alone as it has a limited capacity.

**WEAVING**

Weaving is the core activity in the process of manufacturing a carpet. The ultimate quality of a
handmade carpet depends to a great extent on the quality of weaving.

Kashmiri weavers are in general excellent in the art of weaving the carpets. They can weave the carpets with highest knottage, per square inch like the 31x34. Some of carpets produced by the Kashmiri weavers are even comparable to the world famous Persian Carpets. However, in the following lines a critical examination of the weaving techniques and tools adopted in the carpet industry of Kashmir is presented, in order to identify the problems.

**Loom:**

The carpet looms used in Kashmir are traditional in nature. Although in the city of Srinagar most of the looms are in the satisfactory condition, but in the rural areas, the defective and crude type of looms are generally being used. The result is that the weaving performed on these looms is defective. It is, therefore, recommended that the Government and the exporters/manufacturers should arrange the standar-dized looms for the weavers in the rural areas.

Besides, there has been very little change in the layout of the carpet loom, in Kashmir, for the last so many decades. Experiments should be
conducted for improving the layout of the looms. The prevalent practices in the other carpet producing regions of the world should be studied. ITC, Geneva has made the following observations in this respect.

"Looms should be redesigned along the lines of more scientific Iranian loom, which warp as a sleeve on two beams. Indian and Pakistani looms wrap the finished part of the carpet on the lower beam and as the warp's tension is often uneven, causes distortion in the carpets' width and edges". 32

**Warp**

The first step involved in the weaving of a carpet is the preparation of the warp. The warp is prepared from the cotton yarn in general and in case of purely silk carpets, from the silk yarn. The number of threads in the warp is determined on the basis of knottage per square inch as indicated by the design. After preparing the warp, it is to be fixed on the loom. The warp is to be fixed on the loom in such a way that the various stringes are spread uniformly on both the top and bottom rollers of the loom. If there is some irregularity in the fixation of warp on the loom, then the carpet produced will be irregular in size.

Cottage weavers mostly face this problem in the rural areas of the State. They are not fully well versed in the art of fixing the warp on the loom. It is therefore, suggested that training should not only be provided in respect of actual knotting, but the other important operations should also be covered by the training programme.

Knotting

Knotting is the actual activity of weaving a carpet. On the warp threads the pile is knotted. From balls of wool which lie ready to hand, the weaver breaks off a thread of about two inches long and binds this around two contiguous warp threads from a sort of tassel hanging in front. No actual knotting takes place, only a looping and a pulling tight. In this way knot is added to knot. When one row of knots has been completed across the width of the carpet, a weft thread is inserted in the warp from side to side.

There are two genuine types of knots used in the oriental carpets, viz. a) Persian or Senneh knot and b) Turkish or Chiordes knot. In the Turkish knot

the two ends of the thread are twisted each round a warp thread, whereas in the Persian knot only one end circles a warp thread completely. This means that the Persian knot is slightly less bulky and therefore the more finely knotted piles usually have the Persian knot.

Use of False knots in Kashmir Carpets

Kashmir's carpet industry has exclusively adopted the Persian knot system. Some importers feel that the exclusive use of only one type of knot has produced a monotony in case of Kashmir carpets as compared to Irani rugs. It is, therefore, suggested that the Turkish knot should also be introduced in Kashmir.

But, unfortunately, even a fraudulent modification has been introduced in the Persian knot by the local weavers. This is known as the so-called "double knot". Presently about 90 percent of the total carpet production in the state is constituted of 'double knot' carpets. There are hardly few reputed firms in Kashmir which stick to the 'single knot' carpet weaving.

35. Based on field investigations by the scholar.
The knot tied on four warp threads instead of two, is the so called 'Jufti' or false knot. It is the curse of carpet weaving in Kashmir these days. The purpose is clear, it permits the weaving of a carpet in half the time what would be required to weave the same carpet with an honest knot on two warp threads. Thus about half the wages and the time is saved. But it makes for a much poorer quality carpet, since there will be half as many knots to the given area and the pile will contain half as much wool in a given area. The design becomes loose and hazy. Besides the strength and durability of the carpet is also reduced.

The general use of double knot has seriously deteriorated the quality and reputation of Kashmir carpets. Therefore, it is strongly recommended that the manufacturers, weavers, exporters and various trade promotion organizations should jointly devise measures to discourage the production of 'double knot' carpets, in the long-run interests of the industry.

However, most of the weavers prefer to weave carpets with 'double knot' because they feel that weaving of single knot carpet is very difficult, time consuming and monotonous. Besides, the monetary gain is not adequate. Similarly, most of the manufacturers and
exporters are also concentrating on 'double knot' carpets because they feel that due to present market recession the single knot carpets have not remained price competitive. Thus carpet industry of Kashmir has been caught into a vicious circle of quality deterioration.

To overcome these problems, it is suggested that Government should offer higher rate of cash compensatory support against the export of 'single knot' carpets as compared to 'double knot' carpets, so that manufacturers and weavers receive a better incentive to weave the 'single knot' carpets. Besides, as already suggested, it is hoped that the elimination of 'Taleem' will improve the degree of weaver's job satisfaction and will reduce the problems of job monotony.

WASHING

After the completion of weaving, carpet is sent for washing and finishing. This job is undertaken normally by the specialized washermen of this trade. Broadly speaking, the carpet washing could be divided into two types - lustre washing and chemical washing. Both these methods of washing are being used in Kashmir.

It was observed that owing to non-availability of modern mechanical washing and finishing facility,
finished carpet of Kashmir lack in lustre, sheen, glaze and evenness of pile when compared to carpets originating from Iran and/or Pakistan. It was mentioned that most of the carpets exported from Kashmir to West Germany are washed once more there. This indicates the poor quality of washing operations in our State.

The method of carpet washing used in Kashmir at present is to beat out all dust from the carpet and then to wash it manually with a detergent. This is followed by mild alkaline treatment to impart lustre to the carpet. The process consists mainly of pouring buckets of water or treatment solution over the carpet and rubbing with wooden scrapers. It takes from two to four hours of rubbing to obtain a reasonable level of lusture, results in a loss of weight.

Such washing treatment is often not acceptable to foreign importers. Preferred treatments vary between countries. West Germany importers prefer antique or lustre.

Local washermen are of the opinion that proper types of washing chemicals are not available to them.

Besides, during winter season, the problem of drying the washed carpets becomes acute due to extremely cold weather.

These problems would be solved to a great extent, if mechanised washing and drying facilities are provided to carpet manufacturers. Since a substantial amount is required for setting up of mechanised washing and finishing plant, it is believed no single carpet producer/exporter will come forward in this field. This facility may have to be provided by the Government, under Common Facility Scheme, where in producers/exporters may get their product washed and finished on payment of reasonable charges.

COST OF PRODUCTION ANALYSIS

On the basis of the present pattern of operation of the carpet industry, an attempt is made to study the structure of cost of production of carpet manufacturing in the State. It must, however, be stated here that the cost structure varies from carpet to carpet depending on the size, density of knots, designs, colour combination finish and quality of the raw material used.

Due to the above mentioned reasons it becomes rather difficult to analyse the cost structure in a
generalised form, which can represent the micro-structure in a satisfactory manner. Additionally, the frequent fluctuations in the prices of essential inputs also makes it difficult to analyse the cost structure, which can be valid at least over a fairly long period.

Keeping all these limitations in mind, the structure of the cost of the production of hand-knotted carpets in the State has been analysed for three main categories of carpets i.e. silk carpets, woollen carpets and silk-base carpets. Again in terms of knot density, 18x18 double knots per square inch has been selected for cost analysis, because it is the most common category of carpets manufactured in Kashmir at present. The cost structure which is presented in terms of the percentage shares of the different cost components in the total cost of carpet production is based on the prior 1984 data.

The table 2.4 reveals that the contribution of raw material to the total cost of production is relatively low, in the case of woollen carpets. However, in case of silk carpets, the contribution of the material (viz. silk yarn) to the total cost of production is relatively higher due to the higher cost of silk yarn.
Table 2.4


<table>
<thead>
<tr>
<th>Cost Component</th>
<th>Silk Carpets</th>
<th>Woollen Carpets</th>
<th>Silk-base Carpets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cost per sq.ft.</td>
<td>% in total</td>
<td>Cost per sq.ft.</td>
</tr>
<tr>
<td>1. Raw Material</td>
<td>85.00</td>
<td>42.29</td>
<td>30.00</td>
</tr>
<tr>
<td>2. Wages</td>
<td>112.00</td>
<td>55.74</td>
<td>80.00</td>
</tr>
<tr>
<td>3. Miscellaneous</td>
<td>4.00</td>
<td>1.99</td>
<td>4.00</td>
</tr>
<tr>
<td>Total</td>
<td>201.00</td>
<td>100.00</td>
<td>114.00</td>
</tr>
</tbody>
</table>

Source: Compiled by the scholar on the basis of data obtained through Field investigation.

The fact that the contribution of wages to the total cost of production in all the three categories of carpets, is very high indicates labour intensive nature of carpet manufacturing, which is so because of the fact that the process of production of hand-knotted carpets is completely manual offering employment to both skilled and unskilled workers at different stages in the process.
CONCLUSION

In the foregoing pages various issues and problems faced by the carpet industry in its production process have been examined. However, this discussion will remain incomplete without studying one of the most important inputs into the production system i.e. labour. Accordingly the next chapter is devoted to a detailed study of employment and training of human resource in the carpet industry of Kashmir.

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