

CHAPTER - VIII

THE STUDY OF PROBLEMS OF INPUTS & TECHNOLOGY

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8.1 Handloom industry is subject to many problems. Being an ancient industry, handloom could claim some technological advancement or refreshment. Again, having counterpart in mechanised production, it is suffering from input constraints. Thus the study of input constraints and technological changes is important. A number of research have been carried out on the input problems and technological advancement of handloom industry. A study of cotton handloom industry in Orissa by P. C. Mahapatra (1986)¹ shows that :-

- i. the yarn is the main problem to the weavers;
- ii. the weavers have a fascination towards their indigenous technique of production; and
- iii. there is no commercial viability of handloom industry in long run.

Hence he suggested a few measures, which are as follows :-

- i. implementation of Shivraman Committee Report as to the control of yarn.
- ii. Absorption or adoption of new technology to increase productivity; and
- iii. gradual conversion of handlooms into powerloom. A similar study by S. P. Kulkarni (1984)² in Nagpur city suggested the same as above.

Objective : The objective of this chapter is to examine :-

- I. The extent of the problems of major inputs.
- II. The position of the artisans as to their share of wage/residual in production.
- III. The position of West Dinajpur Crafts in comparison to that of other parts in India.

- iv. The indigenous technique for pointing out the so called inefficiency and attitude of artisans towards new technology and
- v. The past production trend for detection of production fault, if any.

Hypothesis :

To test the findings of P. C. Mahapatra - that "the handlooms have no commercial viability in long run, hence they are to be gradually converted into powerloom", We have developed the following hypothesis :-

- i. Handlooms have no commercial viability in long run; hence they are to be converted into powerloom (H_{01}).

The alternative hypothesis to H_{01} is :

Handlooms are commercially viable provided some measures are taken and they are not to be converted for economic reasons.

The above hypothesis will be tested and the various reasons for their acceptance or rejection will be examined in the following paragraphs.

Methodology :

In view of the objectives we have studied the following factors in the present chapter :-

- i. The process of production to point out the reasons of so called inefficiency.
- ii. Cost composition and analysis. Movement of costs and their comparison with other parts in India.

- iii. Cost of raw material, wage and entrepreneurs residual under changing price level.
- iv. Cash flow analysis.
- v. The problem of distance from raw-material centre.
- vi. Product mix, production trend and colour range of product.
- vii. Available indigenous technology, their efficiency and inefficiency, and
- viii. The prospect of powerloom in West Dinajpur.

For this study we have investigated into representative number of household units and non-household units. We have also studied the time and motion of artisans and consulted the experts in this field. The prices of input indicate the average current prices to the artisans (during 1936-37).

Limitation of the study :

The study is not free from limitation. The main limitation is the limitation of estimation, which may vary from individual to individuals. Again the prices which are considered in the study are mostly local market price. As there was no standard price (which is generally quoted in an organised market) in operation, the researcher was compelled to use the same. Hence little variance may have crept in.

8.2.1. An understanding of the production process is very much essential for economic analysis of cost and cost elements, since the much-debated inefficiency of handloom industry is closely linked with the process of production involved in manufacturing activity. Hence it is worthwhile to

look into the process of production, because this may give us the clues to the possible and desirable improvement needed in them to increase efficiency.

To a casual observer, handloom weaving may appear simple, but, in fact, it involves a number of laborious processes. The production processes involve preloom, loom stage and post loom activities.

The pre-loom activities consist of dyeing of yarn, winding, warping and sizing etc., loom stage activity consists of weaving; and post loom activities include bleaching, anti shirinking measures, printing and calendaring etc. The following paragraphs will enlighten about these processes.

B.2.2 DYEING :

It is an acknowledged fact based on the past experience that the preparation of dye is a work of skill. But with the use of chemical dyes, the preparation of dyes poses less problem at present than in the past. Before the advent of chemical dyes, indigenous and natural dye stuffs were used. Very poor artisans still use such type of dyes. In spite of availability of coloured yarn, it is seen that the Dinajpur weavers dyeing their yarn at home. According to them dyed yarn cost more and their longevity is comparatively short. After dye the yarn are dried in a shadow place for sometime. It is a hardy job and generally male workers are engaged in such job. Dyeing is a field work. It requires huge space. So this job often stopped due to rain and summer.

8.2.3 LOSSENING AND UNWINDING :

The yarn obtained in the hank form requires lossening and unwinding at first. The yarn so unwound is rewound on the warp bobbins and is made ready for preparing the warp - the length-wise yarn preparation. This job mostly done by female and child workers. For this purpose Charka made of wood and bamboo are used. Charka with ball-bearing may improve efficiency in this phase.

8.2.4 PIRN-WINDING :

Pirn winding is done in the case of weft yarn or breadthwise yarn. After the yarn is lossened and unwound, it has to be wound again on the pirns. Usually this work is done by female members of households or hired workers, if necessary, who are paid by piece rate. The prevailing charges is Rs.3 for 75 mora, which are needed for 62 piece of Saree (1 mora = 15 nali or spindle). The local name of this process is 'nali'.

8.2.5 SIZING AND WARPING :

Sizing, necessary for providing strength to the yarn, is an important process. It is a field work i.e. large space is required for this purpose. Sizing is done by one or more persons. Generally rice or arrowroot paste is used for sizing. It is a sensitive job and requires expert hand. It is mostly done by male artisans. After sizing the yarn are warped. Warping is a length-wise yarn preparation. We have noticed various degree of improvement in this process. The artisans producing moderate quantity use 'DRUM' (in drum, warping for 62 to 68 pieces is possible at a time). The local name of this process is 'Pari' and 'Druming'.

The investigation brought out the fact that pre-weaving stage takes more labour hour than weaving stage. This process is time consuming and time lapsing. Since major part of the work is done in field, the work often discontinued due to environmental factors.

8.2.6 After warping and sizing, the yarn are inserted into loom and attached to cloth beam. The material is now ready for weaving. It is a labourious as well as artistic work. The Sarees that are commonly produced in West Dinajpur (40 S x 40 S) take 4 hours at an average per Saree of 4'5 metres.

Post weaving stage is simple and generally done by house-wives. It includes bleaching, anti shrinking measures, calendering etc.

The above study reveals that the production process being lengthy and slow, which is responsible for low labour productivity. When consulting with the engineer (D.H.D.C.) in this field, we came to know that instead of Drum, the Beaming arrangement as it is used in powerloom can be tried in handloom to increase efficiency. But this will not be possible in household sector, since artisans are small with limited production.

8.3.1 DIVISION OF LABOUR AND WAGE CLASS :

In the lengthy process of handloom production a number of persons involve, thus providing livelihood to larger number of people. Of the persons involve, some are family members, for which nothing is paid and some others are hired worker, for which amount is paid. For all types of work, artisans are available, and hence the

rates. The rates collected from different places show little difference. Our cost analysis, considered all elements of costs, paid or not, and is done from the point of view of entrepreneurship.

8.3.2 From the process of production as discussed in the preceding paragraphs, the functional division of work may be outlined as follows :

1. Procurement of raw-material and supervision and necessary investment. It is the function of entrepreneurs, who get residual value.
2. Dyeing : For this artisans are available, who are paid by piece rate.
3. Lossening and Unwinding : Though it is generally done by family members, but if employed, they are paid by piece rate.
4. Pirn-winding : Though it is generally done by family members, but if employed, they are paid by piece rate.
5. Sizing (Pari) : For this artisans are available, who are paid by piece rate.
6. Warping (Druming) : For this artisans are available, who are paid by piece rate.
7. Weaving : For this artisans are available, who are paid by piece rate.
8. Bleaching, calendering and marketing : All these residual functions generally done by entrepreneurs, who get residual value.

It is important to note that, in household sector more or less all the functions are completed by the members within the family. Hence very little payment involved except raw-materials. It is this aspect, for which, handloom production still exist in household sector.

8.3.4 The contributions of different division towards the value added are not same. The contribution of different class of labour in a 40 S x 40 S (4'5 metres) Saree excluding entrepreneurs residual given below :-

<u>Contribution-Division of Work-wise</u>	
Dyeing	3.79%
Pirn winding	7.92%
Sizing	28.60%
Warping	5.52%
Weaving	54.17%
	<hr/>
	100.00

Source : Computed from field survey.

It appears from the above, that weaving accounts for lion's share of value added. The share of weavers varies from product to products, depending upon the degree of fineness and art. Sometimes it constitute 80 to 90% of the total value added. But the share of other workers remain more or less constant, irrespective of the fineness of work, since they do not need much amount of skill. The total contribution of labour as stated above is only 25% of total factory cost per piece.

8.4.1 RAW-MATERIALS :

The raw-materials that are needed in production of fabrics are yarn, dye, hydro, costic and consumable miscellaneous materials of small quantity like cotton waste, lubricating oil etc. The share of total raw material in the factory cost of a 40 S x 40 S Saree (4.5 metres) is 74.17%. The further break-up of the same is given below :

Yarn	70.14%
Dye	23.96%
Hydro	4.38%
Costic	.64%
Misc.	.61%
	100.00

Source : Field Survey.

It appears that the yarn constitutes the major item of inputs and then dye. In handloom the importance of fuel and power is minimum, but the situation is different in case of powerloom sector. Yarn is a typical product. It is of different count group (20 to 120) and has different variety. So, no generalisation is possible as to the yarn. Again yarn is supplied in different forms, like hanks, cones, beams, pirns etc. Handloom needs the supply of yarn in the form of hank. Since yarn has the major contribution in the cost, the price movement of yarn has greater impact on the movement of cost and ultimately upon the existence of the industry in unorganised sector. It is important to note here that the cost of handloom product is mostly variable.

8.4.2 YARN VS WAGE :

Yarn and wage, are two major component of cost. The first one is beyond the grip of the producers and the second one is the life blood of the industry. An analysis of cost shows that in the total cost of a 40S x 40S Saree (4.5 metres) the yarn constitutes 74.17% and wage 25.83%. The proportion of yarn and wage roughly 3:1. This proportion is not constant for all categories of products. The share of yarn move negatively with the positive movement in quality (fineness) of product and the proportion of wage is directly related with the quality of product. More specifically the share of yarn decreases and share of weavers increases with positive change in the fineness of product. The cost pattern of some selected products given in table T 8.4.1 to clear this concept and better understanding of the relation.

Table T 8.4.1

Proportion of Labour cost and cost of raw-materials in different variety of handloom products

Variety	Total cost* Rs. per piece	yarn Rs.	3 as a % of Total	Wage Rs.	5 as a % of Total
1	2	3	4	5	6
20S x 20S	7.12	5.81	81.50	1.31	18.50
40S x 40S	35.73	26.50	74.17	9.23	25.83
40S x 60S	48.90	36.01	73.65	12.89	26.35
2/120S x 2/120S	134.80	46.30	34.35	38.50	65.65
2/120S x 2/120S	179.31	47.31	26.38	132.00	73.62
2/120S x 2/120S	416.27	51.77	12.44	364.50	97.56

* Excluding entrepreneurs remuneration

* Estimated value Source : Field Survey.

It appears from the above table that for the products made of upto 60S yarn, the proportion of raw-materials is about 75% and wage 25%, but for fine products of higher count group of yarn, the fact reversed and wage constitute 87.56% of total cost. In the district of West Dinajpur, since most of the products produce are of below 60 count group of yarn, the wage earner gets little. This is perhaps the main reasons for the miserable condition of Dinajpur weavers.

8.5.2 Cost of Raw-materials (Yarn), Wage and Entrepreneurs' Residual under Changing Price Level : The situation of handloom producers in unorganised sector is very peculiar, because they have little command over the entire system and they are comparatively in a weak position. So when price level changes, they face acute problems of existence. What happens is that price of raw-materials and price of finished goods are beyond the control of the producers. Not only that, they even can not bargain because of their small purchases. In that situation, what producers can do is to for go their own share and thus gradually dripping. Table T 8.5.1 illustrates and confirms the phenomena and shows the relative position of these three elements under changing price level. The table T 8.5.1 shows the cost of yarn, wage and entrepreneurs residual of a 40S x 40S Saree, which is commonly produced (75% of total Saree production) in the district of West Dinajpur during last few years. It appears from the table that in 1984, raw-materials particularly yarn accounts for 42.71%, wage 25% and entrepreneurs residual 4.68% of total cost of production. In 1987, due to price hike of yarn, the cost of yarn reached to 53.39% of the total cost wage

Table T 8.5.1

PERCENTAGE OF COST OF YARN, WAGE AND ENTREPRENEURS
RESIDUE DURING 1984 to 1987

Year	Cost of yarn	Wage	Entrepreneur residue	Factory cost	Net Cash flow
1	2	3	4	5	3+4
1984	13.67(42.71)	8.00(25.00)	1.50(4.68)	32.00	9.50(29.68)
1985	15.88(46.70)	8.20(24.11)	1.30(3.82)	34.00	9.50(27.93)
1986	18.97(52.69)	8.72(24.22)	1.32(3.66)	36.00	10.04(27.88)
1987	20.29(53.39)	9.23(24.28)	1.37(3.60)	38.00	10.60(27.88)

Source : Computed from Field Survey

- * The amount in Rupee
- * Based on cost of a 40S x 40S Saree
- * Figure in brackets represents percentage of total cost
- * Calculated from actual information based on field survey.

Table T 8.5.2

PRICE MOVEMENT OF YARN/WAGE AND FINISHED GOODS

Items	1984 (Rs.)	1987 (Rs.)	% change
Yarn (40 S)	155 (per bundle)	230 (per bundle)	48.38
Wage	4 (per piece)	5 (per piece)	25.00
Finished goods (40S x 40S) Saree (per piece)	32	38 (per piece)	18.75

* Bundle = 4.5 Kg.

Source : Computed from Field Survey.

24.28% and entrepreneurs residual 3.60% of the total cost. It is also important to note that during the period 1984-87 the price of yarn raised by 48.38%, the wage by 25%, while finished goods 13.75% (Table T 8.5.2). Due to this non-symmetrical rise in price, the absolute amount of entrepreneurs residual decreased from Rs.1.50 to Rs.1.37. The prices so disclosed are subject to adjustment of inflationary price rise. Allowing premium for inflationary element, it will be seen that the real wage and real residual have decreased. Thus increasing hike in price of yarn seems to be a challenge to the handloom producers in the unorganised sector for existence.

8.5.3 Cash flow Analysis : Commercial viability is an ultimate test that justify the existence of an industry. Conventionally it is ROI (Return of Investment), which is applied to test the commercial viability of a concern. In modern times, Cost-Benefit analysis and Social-cost-Benefit analysis are applied to test the viability of a specific project, of commercial and utility in nature respectively. Very recently, Cash flow analysis is used widely as a determining factor of a specific project.

The discussions in the preceding chapters, confirm the view that unorganised sector, because of its peculiar characteristics and social background, should not be treated as commercial sector. Hence so called sense of commercial viability does not appear meaningful to asses viability of any activity in unorganised sector. So wage structure or entrepreneurs' residual individually should not be treated as a test of commercial viability of handloom industry in unorganised sector. We have seen that every household unit constitutes a complete unit having negligible external participation. Hence little amount is paid to outsiders

except raw-materials. In such units where individual contribution cannot be measured, net cash flow from operation or net value added appears meaningful as a test of viability. It appears from the preceding paragraphs that, though individually various element of wages and entrepreneurship residual is negligible as a percentage of total cost, but if summed up, they constitute 23% to 35% of total factory cost, which is not an insignificant one as a rate of earning of household units.

8.6.1 Problems of Distance From Raw Materials Centre :

One of the important problems facing the Dinajpur weavers is the problem of transportation cost. The prime raw materials i.e. yarn and dye are mainly produce in the States other than West Bengal, to which, this district belongs. As a matter of fact, the cost of raw materials generally higher than in the other parts of the country. Not only that, the small producers are not in a position to purchase in bulk. It was observed during field survey that weavers in the remote villages do not get yarn at their own places. So they are required to be travelled frequently about 10 to 20 Km or even more to buy yarn from the nearest market. Such frequent visits cost them six to eight rupees each time apart the temporary stoppage of the loom. It appears that transportation cost, which the district of West Dinajpur is subject to is significant enough and therefore deserve special attention.

8.6.1.2 Comperative Cost : In view of the higher cost of Dinajpur products, has been compared with the cost of

Similar product produce in Orissa and Nagpur (Table T 8.6.1) to determine the extent of extra charge. It appears from the comparative cost given in the table that the cost of yarn in West Dinajpur (53.39%) is significantly higher than the cost of the same in Orissa (41.21%) and Nagpur (38.56%). As a consequent Dinajpur weavers and entrepreneurs get little in comparison to that of other places.

Table T 8.6.1
Comparative cost of a Particular Product

Cost	* West Dinajpur	** Orissa	*** Nagpur
Yarn	53.39%	41.21%	38.56%
Wages	24.28%	32.62%	34.25%
Entrepreneurs residual	3.60%	7.56%	9.19%

Percentages are in terms of total cost.

* Computed value

** Values stated in the research paper - Economies of cotton handloom industry in Orissa by P.C.Mahapatra,

*** Values stated in the research paper - Economies of handlooms in the city of Nagpur since 1960 by S.P.Kulkarni.

8.6.2 Price of Yarn -- Demand and Supply Analysis :

It has already been shown that the increasing price of yarn putting a challenge to the weavers for existence. One of the major reasons is the shortage of supply of yarn in hank form. In most handloom centres of West

Table T 8.6.2

DEMAND OF YARN IN WEST BENGAL BY UNORGANISED
SECTOR : 1980 (in thousand Kg.)

Count group	Quantity	% of total
Upto 18	300	7.63
20 to 28	800	20.35
30 to 36	550	13.99
40	900	22.90
60	423	10.76
80	140	3.56
100	134	3.40
120	14	.35
2/10	76	1.93
2/20	233	5.92
2/30-2/36	108	2.74
2/40	176	4.47
2/60	60	1.52
2/80	16	.40
Total	3930	100.00

Source : Directorate of Handloom Industry.

Table T 8.6.3
SUPPLY OF YARN IN INDIA

Year	(in Million Kg.)		
	Yarn produce in India	Yarn produce in West Bengal	Deliveries to unorganised sector in hank form
1977	846	17.9(2.1)	203.74(24.03)
1978	912	20.9(2.3)	218.62(23.97)
1979	952	16.5(1.73)	232.43(24.41)
1980	1058	21.2(2.0)	257.35(24.32)

Source : Hand Book Statistics on Cotton Textile Industry, A.J.C.M.F., Bombay

* Figures in parentheses represent percentage of total.

Table T 8.6.4
INDEX-NUMBERS OF WHOLE SALE PRICES OF RAW COTTON,
COTTON YARN AND COTTON CLOTH

Year	Raw Cotton	Cotton yarn	Cotton cloths (Mill)
1971-72	107.8	113.1	111.2
72-73	91.6	123.2	115.4
73-74	138.3	151.6	133.8
74-75	168.8	177.5	173.2
75-76	136.4	141.1	161.7
76-77	197.5	178.0	165.7
77-78	193.0	197.0	178.6
78-79	168.6	200.4	183.8
79-80	164.4	221.4	192.6

Base 1970-71 = 100

Source : 16th Annual Report 1979-80,
The All India Federation of
Co-operative
Spinning Mill Ltd.

Bengal and also in West Dinajpur, it is the medium quality of yarn (20S to 60S) which are in great demand. In West Bengal the demand of different classes of yarn during 1980 given in table T 8.6.2. The table shows that the demand of 40S yarn is highest (at 22.90%) and then 20S to 28S count group (at 20.35%). Demand for 20S to 80S of yarn amounts to 71.96% of the total demand. So far supply is concerned, it is limited. The yarn produce in West Bengal is only 2% of the total yarn produce in India and can satisfy only 18% of the total local demand of organised and unorganised sector. Hence the State has to import from the other States. Again only 52.45% of the total yarn produced in India are distributed to unorganised sector, of which 46.30% (i.e. 24.29% of the total yarn produced) delivered in hank form. Again within the yarn supplied to unorganised sector the yarn of the counts group 20S to 80S accounts for 42.70% (Table T 8.6.3).

In view of the demand and supply gap of yarn, It's price going up gallopingly. So in view of the national importance of handloom industry, the question of price and supply control of yarn be given due importance immediately.

8.6.3 Price of Yarn — The distribution system :

Apart the shortage in supply of yarn in hank form, the forms of organisation for marketing of yarn aggravates the situation. There is usually a chain of yarn dealers in every area ranging from the big city merchant to the smallest retailers (foriya) in the village. From the whole-sale stage to that of final

retailing, each dealer adds his own quota of commission to the price of yarn, so that by the time the yarn reaches the hand of the weavers, the prices become considerably high. The proportion of such additions in the final price depend upon the number of intermediaries involved and the distance between the yarn consuming and yarn producing centre.

Another feature of the yarn market, which is perhaps common to all speculative markets, is that any rise in the whole-sale price of yarn is immediately followed by a rise in the retail price, while it takes a long time for the retail price to adjust itself to the wholesale price when it falls. This factor also provides the dealer with an opportunity to make profit at the expense of final consumers i.e. weavers. Furthermore, mills and middlemen are entitled to bank financed on hypothecation of yarn bales. When the availability of free yarn in the market for handlooms is restricted, any hold-up of supplies automatically builds up black marketing practices. Hence the Shivaraman Study Team recommended that the RBI in its Credit Policy should ensure that credit on hypothecation of free yarn by Mills and Middlemen is suitably checked and long periods of hold-up be prevented.

It has been noticed that in recent years the rise in price of yarn and cotton cloth is higher than that of raw cotton. But the rise in price of yarn has no parity with that of cotton cloth (Table T 3.6.4). Therefore, in the interest of handloom industry, it is necessary to evolve some system to control yarn price.

There is an urgent need to tackle the yarn problem. Otherwise, so long the weavers will continue to buy

in the dearest (yarn) market and sell in the cheapest market (cloth market), it is impossible to imagine that he is likely to make a decent living out of his work.

8.6.4 Problems of Fuel and Power and Powerloom in West Dinajpur :

The role of fuel and power is little in household sector, hence it cause no problem to the industry directly. But it is very much important and also a problem in power loom sector. We have already shown that the power supply in the district is unsatisfactory. Of the 24 Power looms allotted for this district, not even a single so far been installed. The reasons may be :-

- * scarcity of power,
- * dearth of finance,
- * distance from raw-materials centre etc.

8.7 PRODUCT MIX :

The cotton handloom weavers of West Dinajpur, at present weave variety of sarees, dhooties, lungies, gamsa and mosquito net, both of plain and artistic in design. The proportion of different varieties produce given below :

Product	*West Dinajpur	**Orissa	*** Nagpur
Saree	68.0%	47.9%	40.0%
Lungi	13.0%	6.0%	3.0%
Dhooti	12.0%	12.9%	35.0%
Gamsa	6.0%	6.7%	2.0%
Others	1.0%	26.7%	20.0%
	100.0	100.0	100.0

Source : * District Handloom Development Centre
 ** P.C. Mahapatra (1985) *** S.P. Kulkarni (1983).

In comparison to the variety produce in Orissa and Nagpur, the product range of West Dinajpur is different and simple. Perhaps this is due to the nature of local demand.

The variety produce in general, in the state of West Bengal are sarees (more than 60 variety), dhooties, lungies, bed sheets, towels and napkins, handkerchiefs, door and window screens. The Dinajpur weavers produce less than 20% of the varieties that can be produced by loom. Offer of choice has a great impact on sale as well as on consumers psychology. But it needs training and skill. Again in the product mix of West Dinajpur, it is the saree of the count group 40S to 60S that occupied the key position. Hence for the upliftment of handloom weavers of West Dinajpur, they are to be so trained that be able to produce variety of products to enhance gross sales, as well as to meet the challenge of changing market demand.

3.7.1 Colour-Range : The consumers fashion has been changing. To-day's fashion is multi colour design that are mainly produce in mills. Multi colour design can be produced in handloom also. The technique is known as 'Tie-Dye' technique or 'Ikat' technique. This technique is essentially a process of tying portions of the same thread and dipping them in dye bath, so that the dye penetrates only in the ~~untied~~ untied portions without affecting the tied portions. This process is repeated several times by untying and tying again and again for dye bath of different colours as required, thus bring out a variety of colours on the same thread at different portions.

The ikat technique, commonly known as 'BANDHA' technique is very much popular in Orissa, Andhra Pradesh, Uttar Pradesh and has wide demand throughout India. But this technique is quite absent in the district. The colour range of dinajpur products is very much limited. Mainly 3 types of simple dyes are in use in the district. In comparison to Gujrat, Orissa and other parts of India, the colour range of products produced in the district is inferior.

Absorption of New Technology :

In this section, a brief discussion on the looms and accessories used by the cotton handloom weavers in West Dinajpur has been taken up. This will highlight the areas of necessities, for introduction of improved equipments and will also unfold the weavers attitude to new technology.

According to H. Tidball, "The loom, in its simplest sense, is nothing more than a frame to hold parallel threads, called warp, at a tension in such a way that other threads, called weft, can be woven to make cloth."³ There is a wide variety of looms that one finds through the length and breadth of the country. The most widely used looms, their ~~technique~~ technique of working and efficiency has been presented below :-

* Throw-shuttle pit looms : According to S. Paul,⁴ this type of loom stands on a pit and the process of picking (throwing of the shuttle, or a weft thread), is done by the shuttle across the shed by hand. This type of loom occupies very little space. This loom

offers an unlimited scope for fabrics having a large variety of extra weft designs. It is more suitable where designs necessitate a change of weft for every pick. It helps in adjusting the pre-dyed weft for the exact formation of tie-dye weft patterns. Fabrics with solid coloured borders requiring three or more shuttles and which have well defined selvages can be more easily woven on it than on other types of loom.

* **Fly-Shuttle Pit Loom :** In a fly-shuttle pit loom, the shuttle is propelled by hammers placed at the end of the lathe (the swing frame of a loom carrying the reed for separating the warp threads and beating up the weft), and thus weaving can be done more rapidly. S. Paul points out that it has all the advantages of the throw-shuttle pit looms. The main advantage of a fly-shuttle pit loom is that, despite its increased rate of production, it can produce fabrics with higher counts of super fine yarn.

* **Frame loom :** Both fly-shuttle and throw shuttle, have a pit at the back for the Sitting Convenience of the weaver. As the pit is a source of dust and dirt, it is desirable to place the loom on a frame. According to S. Paul, the frame loom is a complete unit with all parts independently fitted. It has greater capacity to weave simple designs. At the back of the loom very big beams capable of holding more than 500 metres of warp can be accommodated. The main disadvantage is that it occupies more space and also costs more than a pit loom and is not easy to operate.

In the district of West Dinajpur weavers mostly use fly-shuttle pit loom. Of the 60 households having 150 looms surveyed 30 (60%) were fly shuttle pit loom and 54 (36%) were throw-shuttle pit loom. Only 6 frame looms (4%)

were found using by weavers. But in the co-operative production centres most of the looms were frame loom.

As regard to the efficiency, it is important to note that, each types of loom have some specialities in producing a particular kind of product. For example throw shuttle loom is meant for producing variety design products. On the other hand fly-shuttle is meant for producing plain fabrics. So any comparison in between this two is meaningless. Experts opined that if fabric is woven on throw-shuttle loom, its texture will be better than that of woven on a fly shuttle loom; but large scale production is possible only in a fly shuttle loom. Again Frame loom through costs more than pit loom but frame loom is more productive than pit loom. In spite of the economies of frame loom, Dinajpur weavers were found to use pit loom. According to them, since they are habituated on such looms, any change may reduce their productivity. But so far we think, they are not willing for frame looms because of the scarcity of space and high cost of such looms.

* Comperative Efficiency of Weavers : Productivity and efficiency of Dinajpur Weavers have been compared with the productivity and efficiency of weavers in Orissa and Nagpur. At an average the Dinajpur weavers can woven 13 to 18 metres of simple cloth in 10 hours, on the other hand in Orissa (P.C.Mahapatra, 1985) average productivity is 10 to 16 metres in 10 hours and in Nagpur (S.P.Kulkarni, 1983) 14 to 18 metres. Thus average efficiency of Dinajpur weavers is at par with that of other states. But as regard to the skill of artistic production, Dinajpur weavers are well behind the others. This appears from the low consumption of higher count yarns and product mix.

Table T 8.7.1
 PRODUCTION OF HANDLOOM PRODUCTS IN WEST DINAJPUR
 AND WEST BENGAL

Year	West Dinajpur		West Bengal		WD/WB
	Million meter	Million Rupees	Million meter	Million Rupees	
1965-66	1.58	32.08	175.60	3512	0.89%
66-67	1.62	30.78	179.46	3589	-
67-68	1.61	30.59	181.82	3638	-
68-69	1.32	23.76	181.80	3636	-
69-70	.82	12.3	180.90	3618	-
70-71	.32	4.8	181.80	3636	-
71-72	.25	4.0	184.27	3685	-
72-73	.59	10.03	190.00	3800	-
73-74	.98	15.68	200.00	4000	-
74-75	1.35	20.25	203.50	4070	-
75-76	1.69	25.35	205.50	4220	.82%
76-77	1.82	29.12	207.00	4270	-
77-78	2.09	37.62	225.00	5532	-
78-79	2.25	72.00	249.90	9375	0.90%
79-80	2.59	102.30	270.00	12825	0.95%

Source : Directorate of Cotton Handloom Industry,
 West Bengal
 District Handloom Development Centre
 West Dinajpur

Percentage change in production from 1965-66 to 1970-80

West Dinajpur 63.92%

West Bengal 53.75%

Percentage change in value from 1965-66 to 1970-80

West Dinajpur 219.48%

West Bengal 265.17%

Table T 8.7.2

V/Q* RATIO IN WEST DINAJPUR AND WEST BENGAL

Year	West Dinajpur	West Bengal
1966-67	20	20
1968-69	18	20
1971-72	16	19.99
1974-75	15	20
1977-78	18	24.58
1979-80	39.49	47.5

$$V/Q \text{ ratio} = \frac{\text{Total value of production at factor cost}}{\text{Total production in Unit}}$$

8.7.2 OUTPUT :

Table T 8.7.1 shows the value and quantity of total production of handloom sector in the district of West Dinajpur as well as in the State, West Bengal. In 1979-80 total production of this district was 2.59 million metres, which was only 0.95% of the total production in the State with 1.25% of the total looms in the State. In terms of monetary value it was only 0.79% of the total in the State. In spite of the havoc fall in production during 1970-74, due to Bangladesh turmoil the district was recovered steadily. The percentage change in production from 1965-66 to 1979-80 in the district was 63.92% against 53.75% in the State. The production shows a step rise from 1976 and onwards. It was mainly due to Janata Saree Scheme introduced by the Government to help the small artisans.

The value of output is an important factor. The ratio of value/production is an important key for analysis of output pattern, particularly where with the same amount of raw materials or with the same quantity of work done, the degree of value added differs, depending upon the nature of art produced. Generally this ratio moves upward in spite of constant production level due to price level change. Eliminating the effect of price level change. We could find out, the movement of average artistic work or in other words the quality improvement. During 1966-67 the V/Q ratio in the state was 20 and so was in the district of West Dinajpur, indicating the average performance of Dinajpur weavers was at par of the state. But since then the V/Q ratio of West Dinajpur in comparison to the state has been gradually decreasing. During 1979-80 the V/Q ratio of West Dinajpur was 39.49 against 47.5 of the state. Thus indicating the average performance of Dinajpur weavers is inferior to that of state, or in other words the Dinajpur weavers gradually

concentrating on low value added handloom production. The reasons for such tendency may be the following :

- * High demand of low cost goods in local market.
- * Insufficiency of working capital.
- * Quick marketing i.e. very low gestation period.
- * Low degree of skill and training.
- * Lesser need for hired labour.
- * Problems of marketing.

8.8 SUMMARY :

The aforesaid discussion clearly brings out the fact that in the area surveyed the cotton handloom weavers are using old fashioned looms and equipment that are responsible for low productivity of the industry.

Cost of yarn and wages are the two main components of the cost of production. ^{The Proportion} of these elements in the total cost can not be expected to conform to any uniform standard in case of handloom products, where heterogeneity of products is the rule. These proportions vary from place to place, from one type of fabric to another and from one range of counts of yarn to another. Some general trend in the variations in the relative shares of these elements in the cost of production may, however, be hinted at. The wage is higher in quality fabrics and is lower in simple coarse varieties. The cost of yarn in general is higher in West Dinajpur than other parts in India. This is due to distance from raw material centres. The production in the district constantly increasing but artisans are gradually concentrating in simple coarse fabric. This is the main reason for miserable situation of Dinajpur artisans. The weavers producing

ordinary cloth should therefore switch over to weaving of quality fabrics. The situation can be improved further by the introduction of 'Ikat' technique, since dye preparation is one of the major product fault. The weavers should be given training in use of latest tools. The product mix of Dinajpur is also inferior to that of other parts in India. Hence suitable planning for production schedule is necessary. Lastly raw materials bank may be created to assist the small artisans operating in household sector.

Though, in view of low margin of entrepreneurs residual, it appears that handlooms have no commercial viability, but since it is mainly produced in household sector, where family as a whole provides labour and artisans, himself are the entrepreneurs, little payment is involved to outsiders. Hence wages or entrepreneurs residual, individually are not the determining factor. What is important is the difference between selling price and cost of raw materials i.e. wages factor and residual factor taken together. It is estimated that the net inflow of cash to weavers is about 28 to 35% of the factory cost at an average. It also appears that, with moderate family working hand, an artisan can earn Rs.30 to Rs.35 per day i.e. Rs.900 to Rs.1050 per month. Hence the hypothesis (H_{01}) that the handlooms have no commercial viability is unacceptable. Again they should not be converted into powerloom at a large scale as it provides wide employment opportunity in household sector. Therefore, we conclude that given the proper support and eliminating the existing bottlenecks, handlooms may be converted into profitable way of living in rural sector, rather than eliminating them.

References & Notes

1. Mahapatra, P.C. - Economics of Cotton Handloom Industry in Orissa - Ph. d. Thesis 1985 University of Bombay.
2. Kulkarni, S.P. - Economics of Handlooms in the city of Nagpur, Ph. d. Thesis 1983 University of Nagpur.
3. Tidball, H. - The Weaver's Book : Fundamental of Hand-weaving, Newyork, The Macmillan Company 1961 p.4.
4. Paul, S. - Directory of Mass Employment, New Delhi, E.S.R.F. 1978-P-160.