

CHAPTER -5

PRODUCTION OPERATIONS IN SAMPLE MILLS

An attempt is made in this chapter to study the production operations and manufacturing processes involved in producing carded and combed yarns and different varieties of paper products in the sample private and public sector cotton textile spinning mills and private and joint sector paper mills. Further, profit contribution is also computed and analysed.

1.0 Spinning mills

The profile of select cotton textile spinning mills is provided in this section.

1.1 Private sector cotton textile spinning mill

The select cotton textile spinning mill produces different varieties of yarn. It manufactures carded yarn in hanks and cones and combed yarn in cones. Each type of yarn is produced in large size.

1.1.1 Manufacturing process

Cotton lint from ginning process is supplied to the spinning mill.

Cotton lint is selected as to the requirements of variety of yarn to be produced. The mill has eight departments such as blow room, carding, combing, drawing, simplex, spinning, cone winding and reeling. Each department has a number of machines. Each machine has a number of production units. The details of number of departments, number of machines, number of production units and total units are provided in Table 5.1. There are 202 machines in all the departments put together.

Table 5.1: Structure of Private Sector Cotton Textile Mills

Department	Number of machines	Number of production units	Total units
Blow room	4	1	4 scutchers
Carding	35	1	35 cards
Combing	20	1	20 combers
Drawing	8	2 deliveries each	16 deliveries
Simplex	2	108 each	1632 bobins
	11	120 each	
	1	98 each	
Spinning	24	440 each	43,780 spindles
	30	416 each	
	3	420 each	
	5	440 each	
	13	864 each	
	6	1008 each	
Cone winding	12	120 each	1440 drums
Reeling	28	2 each	56 reels

Source: Sample survey

The production units stood at 4041. The total units account for 46983. This shows the capacity of the mill.

- (a) **Blow room:** The main function of blow room is opening out cotton frame, the hard form of cotton lumps from bales. And further loosening it to an extent required by beating through various openers and beaters in the blow room line. Thus waste and foreign matter from cotton are simultaneously extracted. The material comes out finally from the blow room in the form of sheet that gets wound in the form of lap. The uniformity in the weight of sheet is continuously maintained at this level.
- (b) **Carding and comber:** The main object of carding is further opening of cotton fibre by giving treatment through combing action. Cleaning is also done at this stage. The material is formed into silver-lap.
- (c) **Drawing:** Six or eight silvers from carding department are combined and drawn together between pairs of rollers. This action results in regularity in the weight of silver; and straightening and parallelisation fibres. The process is repeated twice or thrice to ensure the desired effect. The material is thus made ready for subsequent process.
- (d) **Simplex:** The twisting operation commences from this stage. The silver is drawn thinner and thinner to the extent required between the pairs of rollers twisted by means of spindle revolution and wound on the bobbing for easy transit to the process.
- (e) **Spinning:** The roving material from fly-frame department is fed to the spinning frame and material is drawn by a number of times to the

extent desired depending on the count proposed. This is given by means of spindle revolution. Thus the yarn is spun and wound on the bobbin.

- (f) **Cone-winding and reeling:** The yarn produced, can be taken on to winding machine or a reeling machine depending on the form of material i.e., finally required. The desired form of cone is obtained on the cone-winding machine for easy facing transit. The yarn is reeled into hanks to reeling machines and generally 10 hanks are joined to make a knot. The final product is sent to packing department. The knots are packed into bundles. Bundles are stored in a godown. Later bundles are dispatched.

Each product is processed sequentially in various departments.

The sequence of operations is exhibited in Figures 5.1 and 5.2. The raw material passes through various stages as given in the flow diagram.

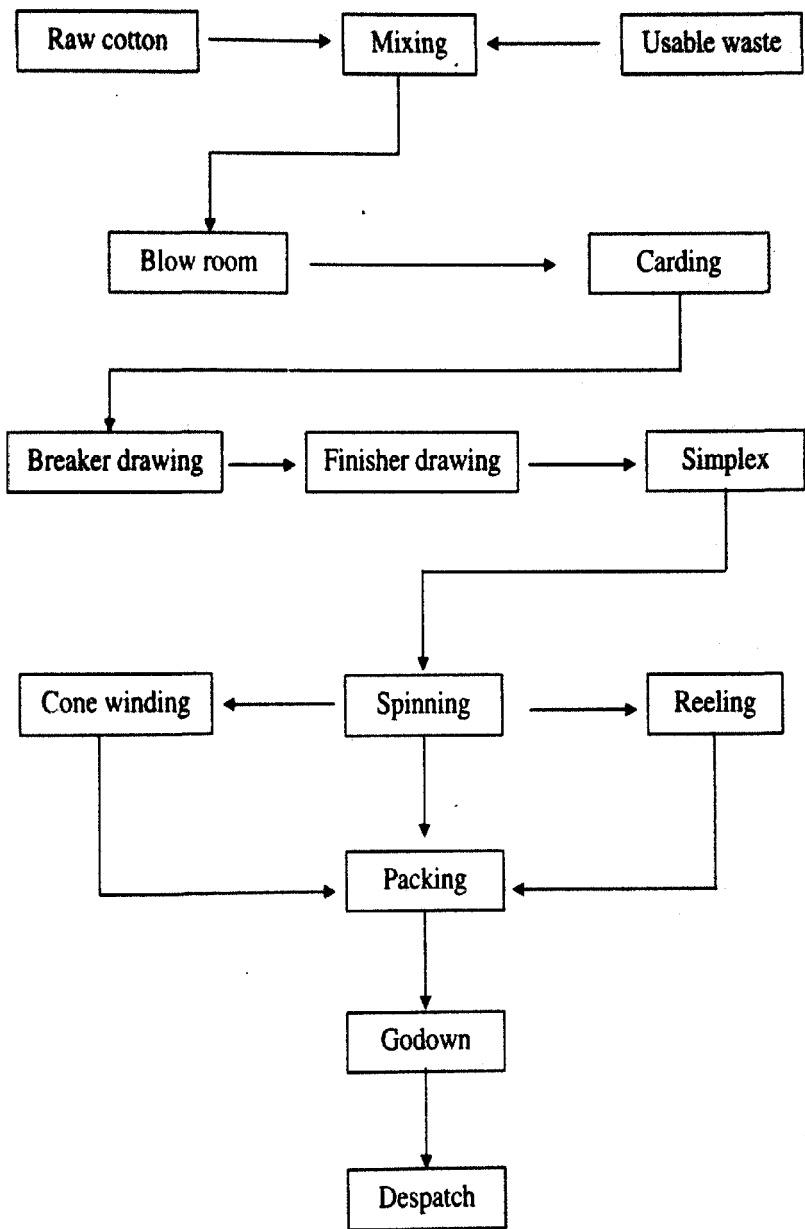
1.1.2 Products manufactured

The sample mill produces eight varieties of product counts. They are 27^sK, 32^sK, 34^sKH, 38^sK, 38^sCH, 40^sC, 54^sC and 64^sC (where K is carded and C is combed yarn). It means that the sample cotton textile yarn mill in the private sector produces both carded and combed yarn.

1.1.3 Processing time

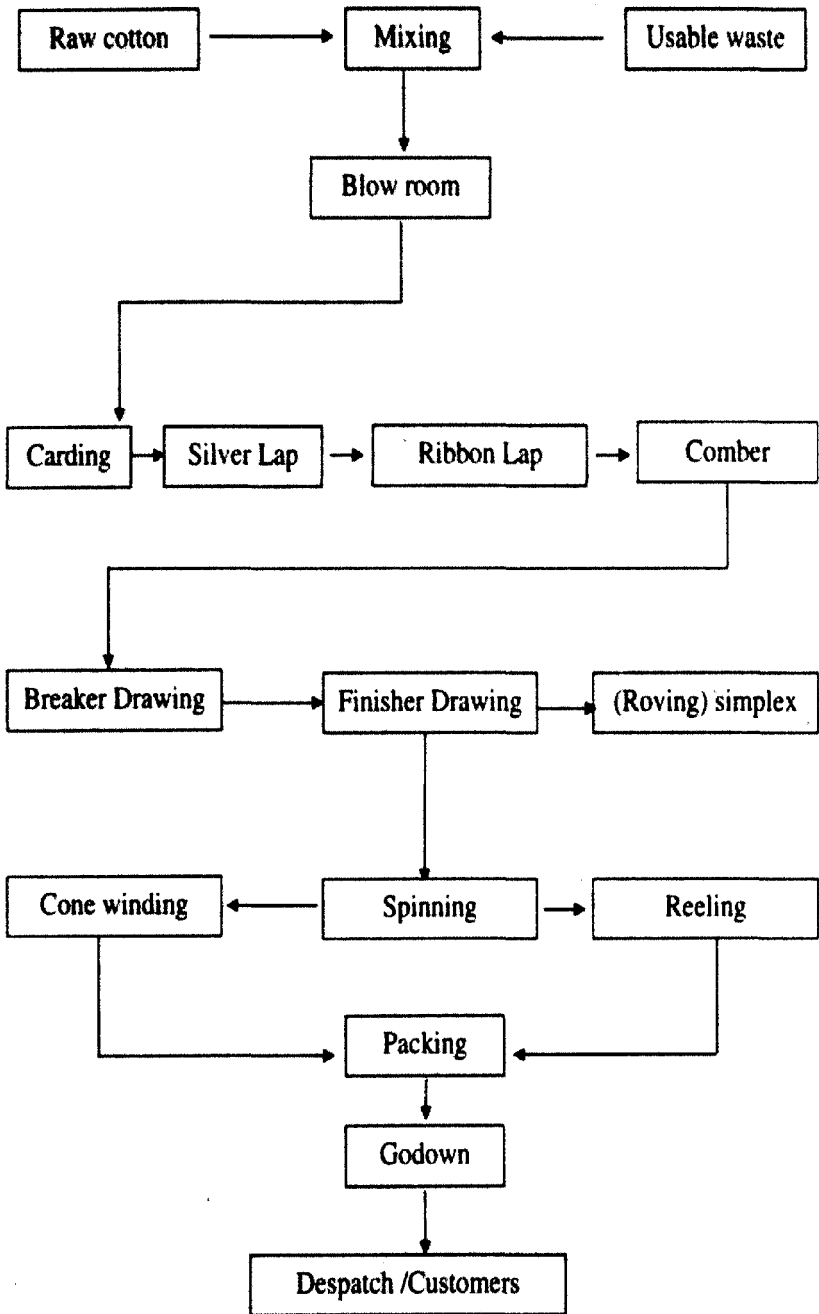
The details of time taken for producing hundred kgs. of yarn is given in Table 5.2. The processing time varies across the products

Figure 5.1: Flow Diagram for Manufacture of Carded Yarn in the Private Sector Cotton Textile Spinning Mill



Source : Sample survey

5.2 Flow Diagram for Manufacture of Combed Yarn in the Private Sector Cotton Textile Spinning Mill



Source: Sample Survey

over the departments. Of all the departments, the highest processing time is consumed in spinning for all the products without any exception.

Table 5.2: Time Taken in Private Sector Cotton Textile Spinning Mill for Production of 100 kgs. of Yarn

(hours)

Department	Type of Product							
	27°K	32°K	34°KH	38°K	38°CH	40°C	54°C	64°C
Blow room	0.56	0.56	0.56	0.60	0.60	0.60	0.60	0.60
Carding	4.45	4.45	4.45	5.33	5.33	5.33	5.33	5.33
Combing	--	--	--	--	6.00	6.00	6.40	6.40
Drawing	1.20	1.20	1.20	1.35	1.35	1.35	1.65	1.83
Simplex	2.18	2.18	2.18	2.53	2.53	2.53	3.12	3.50
Spinning	13.33	17.14	17.14	21.82	18.46	18.46	30.00	36.92
Cone winding	1.54	1.67	1.67	--	2.08	2.18	3.03	3.60
Reeling	--	--	--	20.86	--	--	--	--

Source: Sample survey

It is followed by combing department for four products. Next to it is carding department. Out of the products, 64°CK requires highest time (52.49 hours) whereas the least 27°K (23.26 hours). In the remaining products, it varies between 27.2 hours and 51.13 hours. It may be concluded that different products consume different processing times in various departments. When all the departments are put together, 64°C consumes highest time while 27°K lowest. Of all the departments, spinning ranks first and blow room last.

1.1.4 Available time

Table 5.3 reveals the total time available in each department for a month. It can be observed that there exists shift system with eight

Table 5.3: Total Time available per Month in each Department of Private Sector Mill

Department	Working time per each shift	Time available (hours)
Blow room	8 hours	2563.20
Carding	8 hours	23175.60
Combing	8 hours	11392.00
Drawing	8 hours	5177.72
Simplex	8 hours	9562.16
Spinning	8 hours	69420.00
Cone winding	8 hours	7337.46
Reeling	8 hours	10099.42

Source: **Sample survey**

hours duration in all the departments. As usual, the highest time is available in spinning department (69420 hours) followed by carding (23175.60 hours), combing (11392 hours), reeling (10099.42 hours), simplex (9562.16 hours), cone winding (7337.46 hours), drawing (5177.72 hours) and blow room (5663.20 hours). It may be inferred that maximum number of working hours are available in spinning department as against blow room department.

1.1.5 Profit contribution

The particulars of profit contribution per 100 kgs. of output is furnished in Table 5.4. It can be observed that the profit contribution is the highest in 64°C (Rs.5790) followed by 54°C (Rs.4920), 40°C (Rs.3520), 38°C (Rs.3450), 38°K (Rs.3300), 34°KH (Rs.3100), 32°K

(Rs.3000) and 27^sK (Rs.2800). It is evident that, among the products produced by private sector cotton textile spinning mill, profit contribution is more in 64^sC whereas least in 27^sK.

Table 5.4: Profit Contribution 100 kgs of Yarn in Private Sector Cotton Textile Mill

	(Rs.)							
Name of the produced	27 ^s K	32 ^s K	34 ^s KH	38 ^s K	38 ^s CH	40 ^s C	54 ^s C	64 ^s C
Profit contribution per 100 kgs	2800	3000	3100	3300	3450	3520	4920	5790

Source: Sample survey.

1.2 Public sector cotton textile spinning mill

Presently, public sector cotton textile spinning mill produces seven varieties of product counts. These are 20^sK, 25^sK, 26^sK, 32^sK, 40^sK, 42^sK and 60^sK. There are nine departments through which cotton lint passes through to become usable product count. The departmentation in the public sector mill is similar to that of private sector mill (see Table 5. 5). The additional department in the public sector mill is named as auto comer. There are a variety of machines across the departments. The aggregate numbers of machines are 127. Similarly, production units stood at 3701. The total number of units varies across the departments. If all the departments are taken as a whole, total units stood at 28787. It is significant to note

Table 5.5: Structure of Public Sector Cotton Textile Spinning Mill

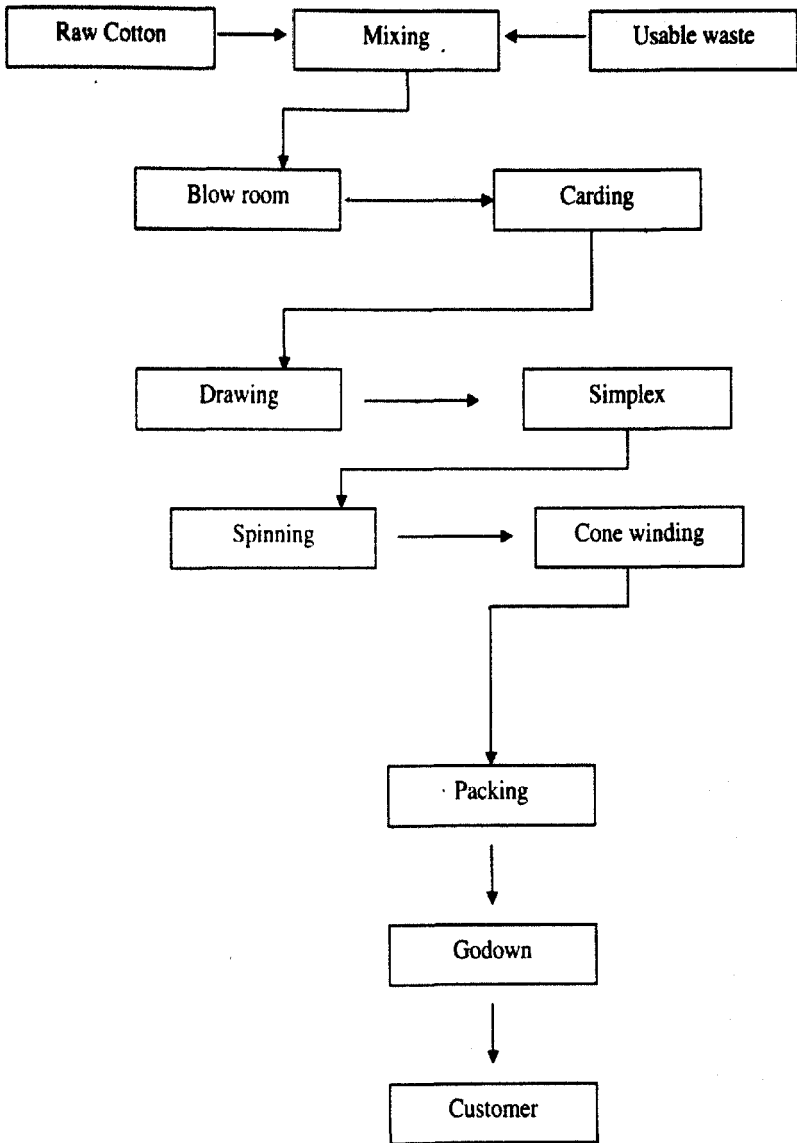
Department	No. of machines	Production units	Total units
Blow room	3	1	3 scutchers
Carding	28	1	28 cards
Combing	4	1	4 combers
Drawing	6	2	12 deliveries
Simplex	6	120 each	1080 bobbins
	3	120 each	
Spinning	15	400 each	25,600 spindles
	13	400 each	
	12	420 each	
	20	252 each	
	5	864 each	
Cone winding	4	120 each	840 drums
	3	120 each	
Double winding	1	80 each	80 drums
	2	340 each	
	1	400 each	1080 spindles
Auto corner	1	60 each	60 spindles

Source: **Sample survey**

that there are 9 departments in this mill as compared to private sector cotton textile mill. Among the departments, number of machines, production units and total units are very high in spinning when compared to the remaining. The number of machines and total units are least in blow room department. The production units are minimum in carding department.

The flow diagram for processing of product counts in the public sector cotton textile spinning mill is given in Figure 5.3. It is almost similar to that of private sector cotton textile mill. As usual, the products are processed in various departments as shown in the flow diagram.

Figure -5.3: Flow Diagram for production of Carded Yarn in Public Sector Cotton Textile Spinning Mill.



Source: Sample survey

1.2.1 Processing time

The processing time required for producing 100 kgs of different varieties of yarn in different departments of the public sector cotton textile spinning mill is provided in Table 5.6. Presently, combing, double winding and auto reeling are different. This is due to absence of demand for combed yarn. Like private sector mill, processing time in spinning department is remarkably more when compared to the rest of departments. It varies between 14.12 hours and 24.75 hours. It is followed by carding, simplex, cone winding, drawing and blow room departments. Of the product counts manufactured, maximum time is

Table 5.6: Processing Time required to produce 100 kgs of Yarn in Public Sector Cotton Textile Spinning Mill
(hours)

Products/department	20 ^s K	25 ^s K	26 ^s K	32 ^s K	40 ^s K	42 ^s K	60 ^s K
Blow room	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Carding	5.14	5.14	5.14	5.45	6.14	6.14	7.14
Drawing	2.00	2.00	2.00	2.50	3.00	3.00	3.00
Simplex	3.00	3.00	3.00	3.25	3.50	3.50	3.50
Spinning	14.12	15.12	15.12	18.60	22.46	22.46	24.75
Cone winding	2.73	2.73	2.73	3.35	3.75	3.75	4.55

Source: **Sample survey**

used for 60^sK (43.67 hours), each of 40^sK and 42^sK (39.58 hours), 32^sK (33.88 hours), 26^sK (28.72 hours), 25^sK (28.72 hours) and 20^sK (27.72 hours). It is evident from the Table that different product counts consume varied time periods. The highest time is required for 60^sK

and the lowest for 20°K. The difference is significant across the departments also

1.2.2 Available time

The total time available in different departments of the public sector cotton textile spinning mill is given in Table 5.7. There is a shift system in each department. Each shift consists of 8 hours. The total time available, varies over the departments. It is the highest in spinning department (44272.80 hours) whilst the lowest in blow room department (1900.80 hours). It may be summed up that there is a significant variation in the total number of hours available across the departments. This may be due to the nature of operations carried out by each department.

Table 5.7: Total Time Available per Month in each Department of Public Sector Cotton Textile Spinning Mill

Name of department	Working time in each shift	Total time available (hours)
Blow room	8.0	1900.80
Carding	8.0	18332.16
Drawing	8.0	3590.40
Simplex	8.0	5433.12
Spinning	8.0	44272.80
Cone winding	8.0	4539.33

Source: Sample survey

1.2.3 Profit contribution

Product-wise profit contribution in the public sector cotton textile spinning mill is shown in Table 5.8. Profit contribution per 100 kgs of

Table 5.8: Profit Contribution per 100 kgs of Yarn in Public Sector Cotton Textile Spinning Mill

Name of product count	(Rs.)						
	20 ^S K	25 ^S K	26 ^S KH	32 ^S K	40 ^S K	42 ^S K	60 ^S K
Profit contribution per 100 kgs. of yarn.	2200	2580	2640	3000	4000	4060	4750

Source: Sample survey

yarn is the highest in 60^SK (Rs.4750) followed by 42^SK (Rs.4060), 32^SK (Rs.3000), 26^SKH (Rs.2640), 25^SK (Rs.2580) and 20^SK (Rs.2200). The reasons for significant variation in the profit contribution of each product might be due to variation in selling price and marginal cost. It may be summed up that there is a remarkable difference in the profit contribution among the products. For example, 60^SK contributes more than twice to that of 20^SK

2.0 Paper mills

The details of sample paper mills are discussed in this section. Two paper mills are selected. One from private sector and the other from joint sector as there is no paper mill in the public sector in Andhra Pradesh.

2.1 Private sector paper mill

The private sector paper mill produces different varieties of paper. Each type of paper is produced in large size. This mill has four departments such as pulp mill, stock preparation, paper making and finishing house (see Table 5.9). If all the departments put together, there are 62 machines. The number of production units stood at 374.

Table 5.9: Structure of Private Sector Paper Mill

Department	Number of machines	Number of production units	Total units
Pulp mill			
Chippers	2	1 delivery	2
Digesters	2	1 delivery	2
Washers and bleachers	2	1 delivery	2
Stock Preparation			
Chesters	4	1 delivery	20 machines
Refiners	4	2 Streets	
Paper making			
Wire part	6	1 delivery	6
Press part	6	1 delivery	6
Drying cylinders	6	2 X 35 cylinders 2 x 60 cylinders 2 x 85 cylinders	360
Machine coaters	6	1 delivery	6
Calendars	6	1 delivery	6
Paper reel	6	1 delivery	6
Finishing house			
Rewinders	6	1 delivery	6
Sheelers	4	1 delivery	4
Reel bundling	2	1 delivery	2

Source: Sample survey.

The total units are 428. The raw material i.e. wood has to go through all the four departments to become finished paper. On arrival at a mill, the logs are usually stored in the open air in stacks or in large conical piles or in water. The logs are removed from stacks mechanically and travel by conveyor belt or in water channels to be washed by water jets. The barks are removed, if necessary. At this point, the debarked logs can go either to chipper or the grinding room, depending upon the necessity.

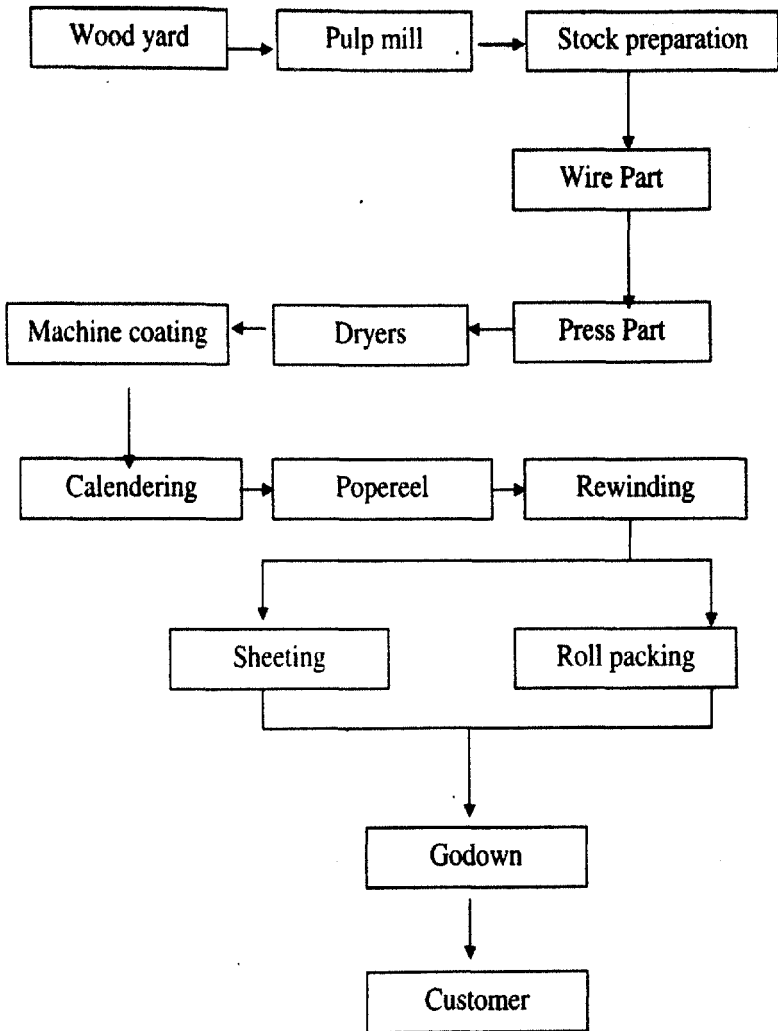
2.1.1 Manufacturing process

The process of manufacture of paper is as follows: The flow chart is shown in figure 5.4.

2.1.1.1 Pulp mill

- (a) **Chipper:** For chemical process, the logs are reduced to chips, which range in size from $\frac{1}{2}$ to $\frac{3}{4}$ of square inch and about $\frac{1}{8}$ inch thick. All chips are screened through a wire mesh for acceptable size. Those found acceptable are sent on a conveyer belt to the pulp mill. Oversized chips are rechipped and returned again for screening. Under sized chips are usually used as fuel in power boilers.
- (b) **Digester:** The wood chips are fed in a continuous digester where they are cooked under pressure and with cooking liquor and reduced to fibre form called pulp.
- (c) **Washing & bleaching:** After passing through the cooking zone, the chips (which have now become pulp) are washed with weak liquor from washing stages that follow. The pulp is continuously blown from the digester to the diffusion washer, where pulp washing is completed. After washing, the next stage is bleaching. A four-stage bleaching process would entail chlorination, caustic soda, sodium, hypochlorite, and chlorine dioxide. By the end of last treatment, fibres are converted from brownish mass to a pleasing white substance.

Figure: 5.4 Flow Chart for Manufacture of Paper in Private Sector Paper Mill



Source: Sample survey

2.1.1.2 Stock Preparation

(a) **Blending fibres/chest:** Despite elaborate process of fibre separation and bleaching, paper is not ready to form on the 'wet end' of the machine. Blending or mixing of softwood fibres for strength and hardwood fibres for fine quality. For manufacture of fine printing paper in various proportions, a common procedure is adopted depending on the type of sheet to be made.

(b) **Refiners:** In order to prepare fibrous slurry for better formation in fine printing papers, blending fibres put through a service of refiner, which then rough them up, fray them and cause the fibres to collapse. This gives mixtures of better bending quality, allowing fibres to adhere to each other more advantageously at the wet end of the process.

2.1.1.3 Paper making

(a) **Wire Part:** The make ready process is almost complete. The furnish is pumped into a head box where it is now over 99 per cent water. All the elaborate preparations are completed and the next step is to place the stock onto a forming wire and remove practically all of the water to form paper.

(b) **Press Part:** As the paper flows along the wire and water is drained along the way, a dandy roll near the end helps to smoothen out the paper. The principal purpose of dandy roll is to improve the formation of paper web by application of pressure.

(c) **Dryer:** When the paper reaches the end of the wire, it is transferred to a belt blanket which conveys it through many steam heated dryers to remove the excess moisture. With each move from one dryer section to other, water content gets smaller and smaller until it reaches the final stage, leaving about 5 per cent moisture in the paper.

(d) **Machine coating:** Another very important step is known as the machine coating process. A coating is put on both sides of paper. Depending upon its grade, it continues through additional dryers or even more coaters to obtain a desired finish.

(e) **Calendering:** The calender is a series of polished iron rollers, stacked one on the top of the other through which the finished paper will pass to be smoothed down. If the paper is to be smoothed down only lightly, giving it a vellum or rough feel finish, it will pass through fewer rollers than a smooth finish paper.

(f) **Pope reel:** The web is carried from calendar to reel where it is wound round the reel spool. This jumbo roll leans on the reel drum rotating at constant speed. The purpose of reel drum is to load the web evenly to reel spool and rotate it. The moisture at the pope reel is 4.5 per cent.

2.1.1.4 Finishing house

(a) **Rewinding:** The next step is rewinding. At this stage, paper is wound on metal or fibre core.

(b) Rolling: Following rewinding, there is a process of slitting rolls to a width specified by customer and packed with labels. Rolls are stored in a godown and dispatched to various places.

(c) Sheeting: If the specifications call for sheeting to a given size, this is carried out in a sheeting department.

(d) Packing: Packing of finished paper is another important activity. The paper is packed on skids or in cartons with identification labels placed on it and stored in a godown. Later on bundles are dispatched.

The private sector paper mill manufactures six varieties of paper. These are writing and printing, photo copy, uncoated board, coated board, MG Poster and Kraft. Each product is processed in various departments as referred to. The final product is sent to the godown.

2.1.2 Processing time

The time required to produce one tonne of paper in the private sector paper mill is produced in Table 5.10. All the varieties of paper as a whole consume more processing time in the finishing house (1.077 hours) followed by paper making (1.001 hours), stock preparation (0.518 hours) and pulp mill (0.48). Of the papers manufactured, MG poster requires the highest time (0.71 hours)

Table 5.10: Time Taken to Produce one Tonne of Paper in Private Sector Paper Mill

Department/products	Writing & Printing paper	Photo copy paper	Uncoated board	Coated board	MG poster	Kraft paper
Pulp mill	0.080	0.080	0.080	0.080	0.080	0.080
Stock preparation	0.087	0.089	0.085	0.085	0.090	0.082
Paper making	0.167	0.200	0.125	0.100	0.267	0.142
Finishing house	0.171	0.256	0.128	0.103	0.273	0.146

Source: Sample survey

followed by photo copy (0.625 hours), writing and printing (0.505 hours), kraft 0.45 hours, uncoated board (0.418 hours) and coated board (0.368 hours). It may be summed up that, among the papers, MG poster consumes the highest time whereas coated board comes the lowest time. Out of the departments, the highest processing time is consumed in finishing house whilst the lowest in pulp mill.

2.1.3 Available time

The department-wise total time available in the private sector paper mill is furnished in Table 5.11. Similar to cotton textile spinning mill, the private sector paper mill works on shift basis. There are 3 shifts in a day. Each shift consists of eight hours. The total number of available hours is the highest in finishing house (6796.8) followed by paper making (441.8), stock preparation (3964.8) and pulp mill (3186) (see Table 5.11). It may be summed up that there is a uniformity in shift system and working hours in all the

Table 5.11: Total Time Available in each Department of Private Sector Paper Mill

Department	Working time per each shift	Time available (hours)
Pulp mill	8	3186.000
Stock preparation	8	3964.800
Paper making	8	4141.800
Finishing house	8	6796.800

Source: Sample survey.

departments without any exception. It may be concluded that finishing house produces maximum number of hours while pulp mill the lowest.

2.1.4 Profit contribution

Table 5.12 reveals profit contribution per tonne of paper in the private sector paper mill. Among the different varieties of paper produced by it, profit contribution per tonne of paper is the highest in

Table 5.12: Profit Contribution per Tonne of paper in Private Sector Paper Mill

Type of paper	Writing & Printing	Photo copy	Uncoated board	Coated board	MG poster	Kraft
Profit contribution per tonne of paper	45000	50000	25000	30000	50000	20000

Source: Sample survey

each of photocopy and MG poster (Rs.50,000) followed by writing and printing (Rs.45,000), coated board (Rs.30,000), uncoated board (Rs.25,000) and kraft (Rs.20, 000). It may be concluded that photo copy and MG poster contribute more profit as compared to remaining categories of paper.

2.2 Joint sector paper mill

The account of sample paper mill from the joint sector is presented in the ensuing pages. It produces five varieties of paper such as writing and printing, colour/printing process, MG poster, news print and kraft. Each product is processed in four departments as was discussed in the private sector paper mill.

2.2.1 Process of manufacture

There are four departments in the joint sector paper mill (see Table 5.13). They are pulp mill (chipper, digester, washing and bleaching), stock preparation (chest and refining), paper making (wire part, press part, drying, machine coating, calendering, pope reeling) and finishing house (rewinding, sheeting and roll packing). The process of manufacture is similar to that of private sector paper mill. Similarly flow chart. There are 9 machines in pulp mill, 12 in stock preparation, 48 in paper making and 16 in finishing house. The production units vary across the departments. When all the departments are put together, total units work out to 688. It may be concluded that the number of machines, production units total units are relatively less in pulp mill.

Table 5.13: Structure of Joint Sector Paper Mill

Department	Number of machines	Number of Production units	Total units
Pulp mill			
Chippers	3	1 delivery	3
Digesters	3	1 deliver	3
Washers & bleachers	3	1 delivery	3
Stock preparation			
Chesters	6	1	6
Refiners	6	3streets	18 machines
Paper making			
Wire part	8	1 delivery	8
Press Part	8	1 delivery	8
Dry cylinders	8	1 x 35 3 x 70 4 x 85	585
Machine coaters	8	1 x 0 2 x 1 3 x 2 2 x 3	14
Calendars	8	8 x 2	16
Pope reel	8	1 delivery	8
Finishing house			
Rewinders	8	1 delivery	8
Sheeters	6	1 delivery	6
Roll packing	2	1 delivery	2

Source: Sample survey

2.2.2 Processing time

Processing time required to produce one tonne of paper in the joint sector paper mill is furnished in Table 5.14. Out of the papers produced, writing and printing requires 2.71 hours when all the departments are put together. Like this, MG poster needs 2.23 hours, news print 1.270 hours, colour/printing process 1.860 hours and kraft

1.150 hours. Of all the departments, for production of one tonne

Table 5.14: Processing Time required to Produce one Tonne of paper in Joint Sector Paper Mill

Department/products	(hours)				
	Writing & printing	Colour printing process	MG poster	News print	Kraft
Pulp mill	0.270	0.210	0.270	0.200	0.200
Stock Preparation	1.040	0.250	0.450	0.310	0.190
Paper making	0.460	0.460	0.470	0.410	0.410
Finishing house	0.940	0.940	1.040	0.350	0.350

Source: Sample survey

of paper requires the highest processing time in finishing department (3.62 hours) followed by stock preparation (2.24 hours), paper making (2.21 hours) and pulp mill (1.15 hours). It can be concluded that out of the types of paper produced, writing and printing consumes more processing time relative to others. Among the departments, much time is needed in finishing house.

2.2.3 Available time

The details of total time available in each department of joint sector paper mill is provided in Table 5.15. Like private sector paper mill, there is shift system with eight hours duration. Among the

Table 5.15: Total Time Available in each Department of Joint Sector Paper Mill

Department	(hours)	
	Working time per each shift	Time available
Pulp mill	8	4896.00
Stock preparation	8	6936.00
Paper making	8	5331.60
Finishing house	8	8595.00

Source: Sample survey

departments, total time available is the highest in finishing house (8595 hours) followed by stock preparation (6936 hours), paper-making (5331 hours) and pulp mill (4896 hours). It may be inferred that highest time is available in finishing house whereas lowest in pulp making. It shows the significance of finishing house.

2.2.4 Profit contribution

Table 5.16 reveals profit contribution per tonne of paper in the joint sector paper mill. The profit contribution per tonne of paper is the highest in writing and printing (Rs.41,750) while the lowest is kraft (Rs.15,000). It is Rs.39,000 in colour/ printing processing paper and

Table 5.16: Profit Contribution per Tonne of paper in Joint Sector Paper Mill

(Rs.)

Particulars	Type of paper				
	Writing & printing	Colour printing process	MG poster	News print	Kraft
Profit contribution per one tonne of paper	41,750	39,000	37,900	35,000	15,000

Source: Sample survey.

Rs.37,900 in MG poster paper and Rs.35,000 in news print paper. It may be summed up that there is a significant variation in the profit contribution per tonne among different categories of paper. The primary cause may be selling price and marginal cost.

3.0 Comparative analysis

The profit contribution for 100 kgs of product counts in private and public sector cotton textile spinning mills is analysed in this section.

3.1 Spinning mills

The profit contribution for 100 kgs. of yarn in the private as well as public sector cotton textile spinning mills is furnished in Table 5.17.

Table 5.17: Comparison of Profit Contribution per 100 kgs of Yarn between Private and Public Sector Cotton Textile Spinning Mills

(Rs.)			
S.No.	Product	Private	Public
1.	27 ^o K	2,800	--
2.	32 ^o K	3,000	3,000
3.	34 ^o KH	3,100	--
4.	36 ^o k	3,300	--
5.	38 ^o CH	3450	--
6.	40 ^o C/40 ^o K	3520	4,000
7.	54 ^o C	4920	--
8.	64 ^o C	5790	--
9.	20 ^o K	--	2,200
10.	25 ^o K	--	2,580
11.	26 ^o KH	--	2,640
12.	42 ^o K	--	4,060
13.	60 ^o K	--	4,750

Source: Tables 5.4 and 5.8

A look at the Table shows that there is a wide variation in the product mix of private and public sector mills. In other words, products are different except 32^oK and 40^oC/40^oK. Therefore, comparison is very limited. It can be observed that the profit contribution for 100 kgs of 32^oK is same at Rs.3,000 in both the categories of mills. But in the case of 40^oC/40^oK, it is Rs.4,000 in the public sector mill and Rs.3520

in the private sector mill. On an overall basis, it can be said that the profit contribution for 100 kgs. is relatively more in the private sector except one product.

3.2 Paper mills

The profit contribution per tonne of paper in the private and joint sector paper mills is furnished in Table 5.18. It can be observed that, of the products manufactured, both the private and joint sector paper mills produce writing and printing, MG poster and Kraft papers only.

The remaining are different. It may be noted that profit contribution per

Table 5.18: Comparison of Profit Contribution per Tonne of paper between Private and Joint Sector paper Mills

(Rs.)			
S.No.	Product	Private sector	Joint sector
1.	Writing and Printing	45000	41750
2.	Photo copy	50000	--
3.	Uncoated board	25000	--
4.	Coated board	30000	--
5.	MG Poster	50000	37900
6.	Kraft	20000'	15000
7.	Colour printing/Process	--	39000
8.	News print	--	35000

Source: Tables 5.12 and 5.16.

tonne of writing and printing paper is the highest at Rs.45,000 in the private sector while the lowest at Rs.41,950 in the joint sector. A similar trend emerges with regard to MG Poster and Kraft papers. As expected, profit contribution per tonne of paper is the highest in private sector relative to joint sector. This is due to the initiative and personal involvement of private enterprise as compared to joint sector.