

## CHAPTER – 8

### TECHNO – ECONOMIC ANALYSIS – MODEL PROJECTS

It is known fact that each product has its own viability of manufacturing. It directly correlates with the technology used for manufacturing process, types of weave/design, raw material used, cost of the land and power, atmospheric conditions etc. On the basis of available first hand information, an analysis has been made here to assess the techno-economic feasibility for some products. The assessment of the respective product on the fixed quantity to be manufactured by using the weaving machines of different technology is indicated below. It is advisable to analyse the said viability in consultation with the experts before finalizing the project by an entrepreneur. Nevertheless these illustrations will provide an overview of the technoeconomics feasibility to Powerloom owners for improving their product profile while modernizing their units.

Assessment of techno-economic feasibility of the project for product i.e. bed sheet of 100% cotton fabric of construction particulars of r x p: 56 x 48,

Table 8.1: count of warp & weft: 2/40's & 2/40's, final width: 50"

Sr. No.	Details	Semi-automatic	Automatic (Ruti-c)-New	Rapier			Airjet (Import-Old)	Airjet (Import-New)	Projectile (Import-Old)
				(Indig.)	(Import-Old)	(Import-New)			
1	Length of item to be Manufactured ( in Meters Day)	5000	5000	5000	5000	5000	5000	5000	5000
2	Total Warp Weight in Kg. in total item to be Mfd.	472.91	472.91	496.94	496.94	496.94	491.10	491.10	472.91
3	Total Weft Weight in Kg. in total item to be Mfd.	370.34	372.18	397.98	397.98	397.98	397.98	397.98	372.18
4	Unit cost of Warp (Rs./Kg. incd. all Taxes & Delivery Charges)	125.00	125.00	125.00	125.00	125.00	125.00	125.00	125.00
5	Total cost of warp (in Rs.)	59,113	59,113	62,117	62,117	62,117	61,387	61,387	59,113

Sr. No.	Details	Semi-automatic	Automatic (Rutic)- New	Rapier (Indig.)	Rapier (Import-Old)	Rapier (Import-New)	Airjet (Import-Old)	Airjet (Import-New)	Projectile (Import-Old)
6	Unit cost of Weft (Rs./Kg. incl. all Taxes & Delivery Charges)	115.00	115.00	115.00	115.00	115.00	115.00	115.00	115.00
7	Total cost of weft (in Rs.)	42,589	42,801	45,767	45,767	45,767	45,767	45,767	42,801
8	Total cost of raw material (in Lakh Rs.)	1.02	1.02	1.08	1.08	1.08	1.07	1.07	1.02
9	Production /day of the Item on a Loom	60.01	134.11	142.49	213.36	548.64	335.28	617.22	161.93
10	Nos. of Looms Required to manufacture the item - rounded	92	41	39	26	10	16	9	34
11	Cost of a Loom including all Taxes (in Lakhs Rs.)	0.85	3.80	4.00	5.50	22.00	10.00	24.00	5
12	Capital cost of looms-fixed cost- (in Lakhs Rs.)	78.2	155.8	156	143	220	160	216	170
13	Capital cost of other Pre. Machine (Other than Warping & Sizing) (in Lakhs Rs.)	8.00	27.60	3.10	3.10	3.10	3.10	3.10	3.10
14	Area required for a loom with working width (Sq. Ft.)	80	110	130	150	150	150	150	150
15	Total Area required for installation of Looms (Sq.Ft.)	7360	4510	5070	3900	1500	2400	1350	5100
16	Area required for a loom preparatory machine with its working width (Sq. Ft.)	700	400	200	200	200	200	200	200
17	Total Area required for the unit (Sq.Ft.)	8866	5401	5797	4510	1870	2860	1705	5830
18	Requirement of the plot area (Sq. Ft.)	12412	7561	8116	6314	2618	4004	2387	8162
19	Cost of the land incl. Site development @ Rs. 200/Sq. Ft. (in Lakhs Rs.)	24.82	15.12	16.23	12.63	5.24	8.01	4.77	16.32

Sr. No.	Details	Semi-automatic	Automatic (Ruti-c)- New	Rapier (Indig.)	Rapier (Import-Old)	Rapier (Import-New)	Airjet (Import-Old)	Airjet (Import-New)	Projectile (Import-Old)
20	Construction Cost of the Shed @Rs.400/-/Sq. Ft. (in Lakhs Rs.)	35.46	21.60	23.19	18.04	7.48	11.44	6.82	23.32
21	COST OF LAND & BUILDING (in lakhs Rs.)	60.29	36.73	39.42	30.67	12.72	19.45	11.59	39.64
22	Misc. Assests & Machinery (in Lakh Rs.)	11.75	16.97	16.53	16.26	16.18	19.07	19.86	16.74
23	Preliminary & Pre-operative Expences (in Rs. Lakh)	7.91	11.85	10.75	9.65	12.60	10.08	12.37	11.47
24	Margin for Working capital (in Lakh Rs.)	32.95	30.93	33.29	32.27	30.47	31.70	30.64	33.49
25	COST OF THE PROJECT (IN LAKH Rs.)	199.09	279.88	259.08	234.95	295.06	243.40	293.56	274.45
26	Operating Cost - Power @Rs.4.50 per unit (in Rs./day)	8640	8424	9936	9180	7020	9180	7668	13176
	l) Required Power KW per Hr.	80	78	92	85	65	85	71	122
27	Operating Cost – Work Man @ average of Rs.100/- per work man for Plain & Semi-auto Looms and Rs.125/- per man for Ruti-'C' and Rs. 140/- per work man for shuttle-less loom incl.its perks (in Rs./day)	7400	3250	3500	2240	1120	1540	1120	2800
	Required man power a day	74	26	25	16	8	11	8	20
28	Operating Cost - (Rs./day)	128.00	216.00	216.00	200.00	136.00	160.00	88.00	176.00
	Operating Cost - Factory Overheads (in Rs.per Day)								
	l) Stores & Consumables	2,024	1,025	1,170	1,300	600	800	540	1,700

Sr. No.	Details	Semi-automatic	Automatic (Rutic)- New	Rapier (Indig.)	Rapier (Import-Old)	Rapier (Import-New)	Airjet (Import-Old)	Airjet (Import-New)	Projectile (Import-Old)
	II) Repairs & Maintenance	920	615	585	390	200	320	180	680
	III) Administrative Expenses	800	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	IV) Others- Insurance, Bldg. Maintenance, Rent etc.@1% per annum of the Project Cost	569	800	740	671	843	695	839	784
29	Sectional Warping & Beaming Charge @ Rs. 5/- per Kg. of Yarn (Rs.)	2,365	2,365	2,485	2,485	2,485	2,455	2,455	2,365
30	Total operating cost (Other than Interest payable) (Rs./day):	22,845	17,694	19,631	17,465	13,403	16,150	13,890	22,680
31	Interest Payable (Rs./day)	6105	7546	7309	6835	7902	6960	7865	7508
	I) Interest on Project (65% of Project Cost) @12%p.a. (Rs./day)	3697	5198	4812	4363	5480	4520	5452	5097
	II) Interest on Working Capital @16%p.a. (Rs./Day)	2408	2348	2497	2472	2422	2440	2413	2411
32	5% Interest subsidy under tufs of goi	1,540	2,166	2,005	1,818	2,283	1,883	2,271	2,123
33	Operating cost to manufacture in a day (Rs./day)	28,951	25,241	26,941	24,301	21,306	23,110	21,755	30,189
34	Sale price of the product (rs./metre)	30.50	32.00	32.00	33.00	33.00	33.00	33.00	33.00
35	Profit/loss (Rs./metre)	3.42	4.98	3.61	5.27	5.40	5.56	5.46	5.06

**Note:** - *Techno-economic study of this product was also carried-out for new shuttleless loom of Projectile Technology. In case of single width projectile loom, the profit of Rs. 2.00 per mts of cloth was found, which was less than Semi-auto Loom, hence it is not indicated in the above-mentioned table. This technology may be slightly feasible only if projectile loom of double width is used for manufacturing of this product. In this case, the profit per meter of cloth would be Rs.4.07, which is again less in comparison to the other shuttleless weaving technology hence not indicated in this table."*

Assessment of techno-economic feasibility of the project for the product i.e. dani poonam 100% polyester fabric of construction particulars of r x p : 68 x 64, denier of warp & weft : 84/ 84, final width :56"

**Table 9.2:**

Sr. No.	Details	Plain Looms	Semi-automatic	Rapier (Indigenous)	Rapier (Import-Old)	Rapier (Import-New)	Waterjet (Import-Old)	Waterjet (Import-New)
1	Length of item to be Manufactured ( in Meters Day)	6260	6260	6260	6260	6260	6260	6260
2	Total Warp Weight in Kg in total item to be Mfd.	238.38	238.38	240.48	240.48	240.48	240.60	240.60
3	Total Weft Weight in Kg in total item to be Mfd.	224.36	224.36	233.33	233.33	233.33	235.58	235.58
4	Unit cost of Warp (Rs./Kg. incld. all Taxes & Delivery Charges)	140.00	140.00	140.00	140.00	140.00	140.00	140.00
5	TOTAL COST OF WARP	33,373.31	33,373.31	33,667.78	33,667.78	33,667.78	33,684.14	33,684.14
6	Unit cost of Weft (Rs./Kg. incld. all Taxes & Delivery Charges)	140.00	140.00	140.00	140.00	140.00	140.00	140.00
7	TOTAL COST OF WEFT	31,410.18	31,410.18	32,666.58	32,666.58	32,666.58	32,980.68	32,980.68
8	TOTAL COST OF RAW MATERIAL(in Lakh Rs.)	0.65	0.65	0.66	0.66	0.66	0.67	0.67
9	Prod./day of the Item on a Loom	49.29	61.61	106.87	160.02	270.03	160.02	462.92
10	Nos. of Looms Required to manufacture the item – rounded	129	103	59	40	23	40	14
11	Cost of a Loom including all Taxes (in Lakhs Rs.)	0.50	0.80	4.00	6.50	18.00	5.00	18.00

Sr. No.	Details	Plain Looms	Semi-automatic	Rapier (Indigenous)	Rapier (Import-Old)	Rapier (Import-New)	Waterjet (Import-Old)	Waterjet (Import-New)
12	Capital Cost- Looms- (in Lakhs Rs.)	64.5	82.4	236	260	414	200	252
13	Capital Cost - Other Preparatory M/c- (in Lakhs Rs.)	9.41	7.87	5.16	5.16	5.16	5.16	5.16
14	Area required for a loom with working width (Sq.Ft.)	90	110	220	250	250	300	300
15	Area required for installation of Looms (Sq.Ft.)	11610	11330	12980	10000	5750	12000	4200
16	Area required for a Preparatory Machine with its working width (Sq. Ft.)	4800	4200	2200	2200	2200	2200	2200
17	Total Area required for the unit (Sq.Ft.)	18051	17083	16698	13420	8745	15620	7040
18	Reqd. plot area (Sq. Ft.)	25271	23916	23377	18788	12243	21868	9856
19	Cost of the land incl. Site development @ Rs. 100/Sq. Ft.(in Lakhs Rs.)	25.27	23.92	23.38	18.79	12.24	21.87	9.86
20	Construction Cost of the Shed @Rs.300/-/Sq. Ft. (in Lakh Rs.)	54.15	51.25	50.09	40.26	26.24	46.86	21.12
21	Cost of Land & Building (in lakhs Rs.)	79.42	75.17	73.47	59.05	38.48	68.73	30.98
22	Fixed Assessts & Machinery (in Lakh Rs.)	12.66	11.99	16.99	16.69	16.39	17.85	17.55
23	Preliminary & Pre-operative Expences (in Rs. Lakh)	8.30	8.87	16.58	17.05	23.70	14.59	15.03

Sr. No.	Details	Plain Looms	Semi-automati c	Rapier (Indigeno us)	Rapier (Import- Old)	Rapier (Import- New)	Waterjet (Import- Old)	Waterjet (Import- New)
24	Margin for Working capital (in Lakh Rs.)	32.25	27.71	27.71	29.31	25.99	30.45	25.21
25	Cost of the project (in Lakh Rs.)	206.55	214.01	375.92	387.26	523.72	336.78	345.92
26	Operating Cost - Power @Rs.5.50 per unit (in Rs./day)	14520	12936	14124	18480	14256	20328	13728
	Required Power KW per Hr.	110	98	107	140	108	154	104
27	Operating Cost –work Man @ average of Rs.100/- per work man for Plain & Semi-auto Looms and Rs.125/- per work man for shuttle-less loom incl.its perks (in Rs./day)	16300	13100	7375	5625	4000	5625	3250
	Required man power a day	163	131	59	45	32	45	26
28	Operating Cost - Water (in Rs./day)	200.00	152.00	256.00	240.00	240.00	1,840.00	1,440.00
29	Operating Cost - Factory Overheads (in Rs.per Day)							
	I) Stores & Consumables	3,870.00	3,090.00	1,180.00	1,600.00	1,150.00	1,600.00	700.00
	II) Repairs & Maintenance	2,580.00	2,060.00	1,180.00	1,200.00	460.00	1,200.00	280.00
	III) Administrative Expenses	1,000.00	900.00	1,000.00	800.00	500.00	1,000.00	500.00
	IV) Others- Insurance, Bldg. Maintenance, Rent etc.@1% per annum of the Project Cost	566	586	1030	1061	1435	923	948
30	Total operating cost (Other than Interest payable) (Rs./Day):	39,036	32,824	26,145.00	29,006.00	22,041.00	32,516.00	20,846.00
31	Interest Payable (Rs./Day)	6451.00	6542.00	10096.00	10383.00	13341.00	9287.00	9356.00

Sr. No.	Details	Plain Looms	Semi-automati c	Rapier (Indigeno us)	Rapier (Import-Old)	Rapier (Import-New)	Waterjet (Import-Old)	Waterjet (Import-New)
	I) Interest on Project (65%of Project Cost) @12%p.a. (in Rs./Day)	4603.00	4769.00	8378.00	8630.00	11671.00	7505.00	7709.00
	II) Interest on Working Capital @16%p.a.(in Rs./day)	1848	1773	1718	1753	1670	1782	1647
32	Actual operating cost (Rs./day)	45,487	39,366	36,241	39,389	35,382	41,803	30,202
33	Actual price of the product incl. profit @20% (in Rs./mts.)	22.10	21.02	21.77	22.47	22.66	22.64	20.59
34	Existing market rates of the product (rs./metre)	22.00	22.00	23.00	23.00	23.00	23.00	23.00
35	Profit/loss (rs./metre)	-0.10	0.98	1.23	0.53	0.34	0.36	2.41
36	Profit/loss (Rs./day)	-635.87	6,161.66	7,678.96	3,307.11	2,129.44	2,252.89	15,061.52
37	5% interest subsidy on term loan under tufs (Rs./day)	0.00	1987.08	3490.83	3595.83	4862.92	3127.08	3212.08
38	Net profit / loss (rs./day)	-635.87	8148.75	11169.8	6902.94	6992.35	5379.97	18273.60
39	Net profit / loss before tax (lakh Rs./annum)	....	28.52	39.09	24.16	24.47	18.83	63.96



Assessment of techno-economic feasibility of the project for the product particulars of r x p : 120 x 70, denier of warp: 80, count of weft: 40's

Table 8.3: 100% polyester, final width :51" on job work.

Sr. No.	Details	Plain Looms	Semi-auto	Rapier (Indig.)	Rapier (Import-Old)	Rapier (Import-New)	Waterjet (Import-Old)	Waterjet (Import-New)
1	Length of item to be Manufactured (in Meters)	10000	10000	10000	10000	10000	10000	10000
2	Total Warp Weight in Kg. in total item to be Mfd.	502.14	502.14	496.13	496.13	496.13	500.85	500.85
3	Total Weft Weight in Kg. in total item to be Mfd.	153.80	153.80	155.74	155.74	155.74	158.75	333.37
4	Unit cost of Warp (Rs./Kg. incl. all Taxes & Delivery Charges)	140.00	140.00	140.00	140.00	140.00	140.00	140.00
5	TOTAL COST OF WARP	70,299	70,299	69,457	69,457	69,457	70,119	70,119
6	Unit cost of Weft (Rs./Kg. incl. all Taxes & Delivery Charges)	140.00	140.00	140.00	140.00	140.00	140.00	140.00
7	Total cost of weft	21,531	21,531	21,803	21,803	21,803	22,224	46,671
8	Total cost of raw material(in lakh Rs.)	0.92	0.92	0.91	0.91	0.91	0.92	1.17
9	Production /day of the Item on a Loom	49.29	61.61	106.87	160.02	270.03	160.02	462.92
10	Nos. of Looms Required to manufacture the item - rounded	206	165	95	63	37	63	22
11	Cost of a Loom including all Taxes (in Lakhs Rs.)	0.50	0.80	4.00	6.50	18.00	5.00	18.00
12	Capital cost of looms-fixed cost- (in Lakhs Rs.)	103	132	380	409.5	666	315	396

Sr. No.	Details	Plain Looms	Semi-auto	Rapier (Indig.)	Rapier (Import-Old)	Rapier (Import-New)	Waterjet (Import-Old)	Waterjet (Import-New)
13	Capital cost of other preparatory machine-fixed Cost- (in Lakhs Rs.)	17.93	12.77	3.10	3.10	3.10	3.10	3.10
14	Area required for a loom with working width (Sq. Ft.)	140	180	350	400	400	400	400
15	Total Area required for installation of Looms (Sq.Ft.)	28840	29700	33250	25200	14800	25200	8800
16	Area required for a loom preparatory machine with its working width (Sq. Ft.)	18000	14400	200	200	200	200	200
17	Area required for the unit (Sq.Ft.)	51524	48510	36795	27940	16500	27940	9900
18	Reqd. plot area (Sq. Ft.)	72134	67914	51513	39116	23100	39116	13860
19	Cost of the land incl. Site dev. @ Rs. 100/Sq. Ft.(in Lakhs Rs.)	72.13	67.91	51.51	39.12	23.10	39.12	13.86
20	Construction Cost of the Shed @Rs.300/-/Sq. Ft. (in Lakhs Rs.)	154.57	145.53	110.39	83.82	49.50	83.82	29.70
21	Cost Of Land & Building (in lakhs Rs.)	226.71	213.44	161.90	122.94	72.60	122.94	43.56
22	Fixed Assessts & Machinery (in Lakh Rs.)	12.66	11.99	16.99	16.69	16.39	17.85	17.55
23	Preliminary & Pre-operative Expenses (in Rs. Lakh)	18.01	18.51	28.10	27.61	37.90	22.94	22.86
24	Margin for Working capital (in Lakh Rs.)	25.15	25.90	25.90	28.18	24.57	30.22	24.40
25	Cost of the project (in lakh Rs.)	403.46	414.62	615.99	608.01	820.57	512.04	507.46
26	Operating Cost - Power @Rs.5.50 per unit (in Rs./day)	9900	7920	14256	19800	14520	22440	13728
	Required Power KW per Hr.	75	60	108	150	110	170	104

Sr. No.	Details	Plain Looms	Semi-auto	Rapier (Indig.)	Rapier (Import-Old)	Rapier (Import-New)	Waterjet (Import-Old)	Waterjet (Import-New)
27	Operating Cost -work Man @ avarage of Rs.100/- per work man for Plain & Semi-auto Looms and Rs.125/- perwork man for shuttle-less loom incl.its perks (in Rs./day)	16000	12900	9500	6500	4125	6500	2750
	Required man power a day	160	129	76	52	33	52	22
28	Operating Cost - Water (in Rs./day)	200.00	152.00	256.00	240.00	240.00	1,840.00	1,440.00
29	Operating Cost - Factory Overheads (in Rs.per Day)							
	I) Stores & Consumables	200.00	200.00	300.00	300.00	100.00	300.00	100.00
	II) Repairs & Maintenance	200.00	250.00	300.00	500.00	100.00	500.00	100.00
	III) Administrative Expenses	200.00	200.00	200.00	200.00	200.00	200.00	200.00
	IV) Others- Insurance, Bldg. Maintenance, Rent etc.@1% per annum of the Project Cost	1105	1136	1688	1666	2248	1403	1390
30	Total operating cost (Other than Interest payable) (Rs./Day):	27,805.00	22,758.00	26,500.00	29,206.00	21,533.00	33,183.00	19,708.00
31	Interest Payable (Rs./Day)	10592.00	10796.00	15343.00	15211.00	19867.00	13159.00	12925.00
	I) Interest on Project (65%of Project Cost) @12%p.a. (in Rs./Day)	8991.00	9240.00	13728.00	13550.00	18287.00	11411.00	11309.00
	II) Interest on Working Capital @16%p.a.(in Rs./Day)	1601	1556	1615	1661	1580	1748	1616
32	Actual operating cost (Rs./Day)	38,397	33,554	41,843	44,417	41,400	46,342	32,633

Sr. No.	Details	Plain Looms	Semi-auto	Rapier (Indig.)	Rapier (Import-Old)	Rapier (Import-New)	Waterjet (Import-Old)	Waterjet (Import-New)
33	Cost of manufacturing of cloth (Rs./Metre)	3.84	3.36	4.18	4.44	4.14	4.63	3.26
34	Existing job charges (Rs./Metre)	4.00	4.00	5.00	5.00	5.00	5.00	5.00
35	Profit/loss (Rs./metre)	0.16	0.64	0.82	0.56	0.86	0.37	1.74
36	Profit/loss (Rs./day)	801.5	3223	4078.5	2791.5	4300	1829	8683.5
37	5% Interest subsidy on loan under tufts (Rs./day)	0.00	3850.00	5720.00	5645.83	7619.58	4754.58	4712.08
38	Net profit / loss (Rs./day)	801.50	7073.00	9798.50	8437.33	11919.58	6583.58	13395.58
39	Net profit / loss before tax (lakh Rs./annum)	2.81	24.76	34.29	29.53	41.72	23.04	46.88