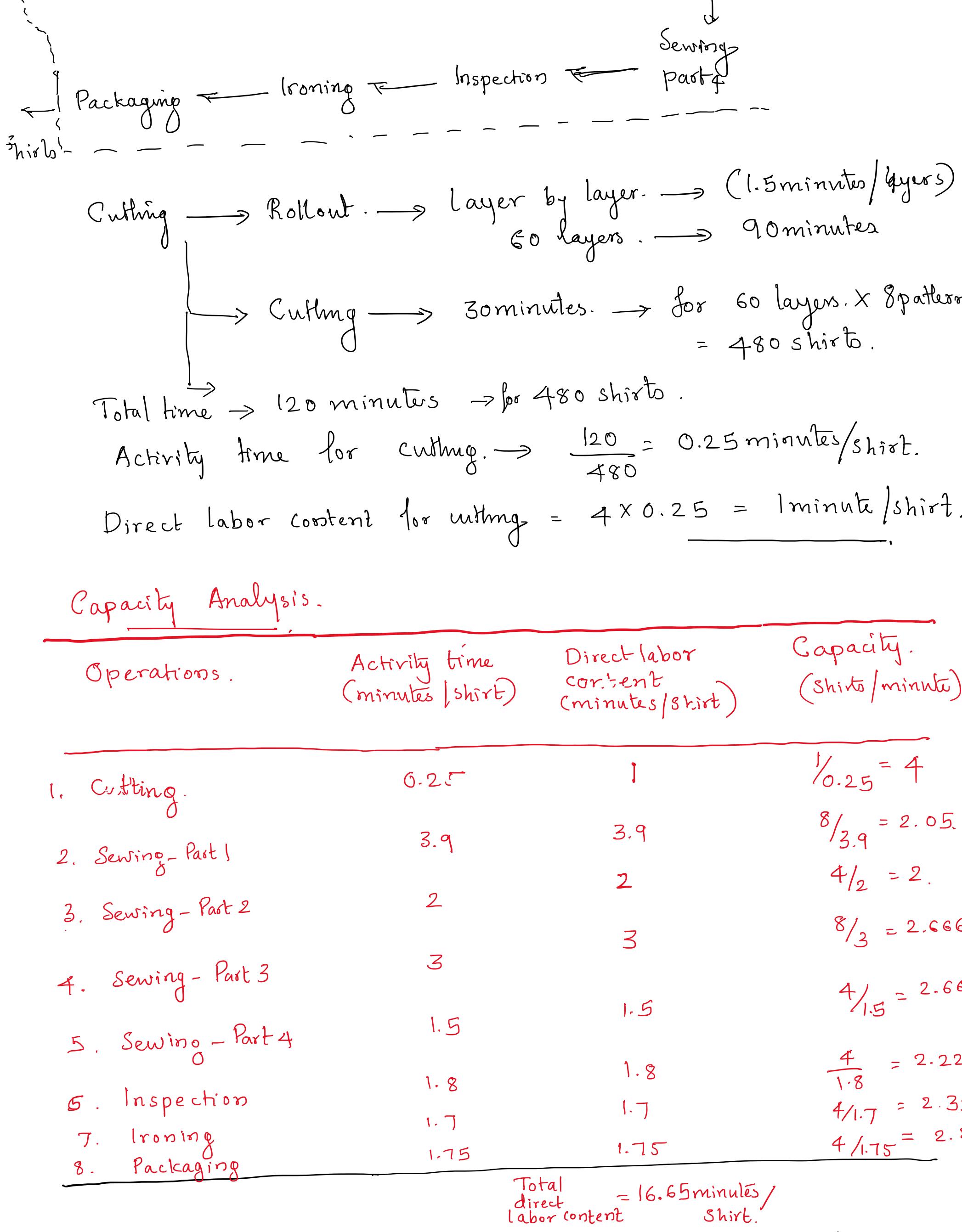


# ABC case

Thursday, 10 February 2022 5:22 PM

Shirts → Minimum variety.



## Capacity Analysis.

Operations.	Activity time (minutes/shirt)	Direct labor content (minutes/shirt)	Capacity (shirts/minute)
1. Cutting:	0.25	1	$\frac{1}{0.25} = 4$
2. Sewing - Part 1	3.9	3.9	$\frac{8}{3.9} = 2.05$
3. Sewing - Part 2	2	2	$\frac{4}{2} = 2$
4. Sewing - Part 3	3	3	$\frac{8}{3} = 2.6667$
5. Sewing - Part 4	1.5	1.5	$\frac{4}{1.5} = 2.6667$
6. Inspection	1.8	1.8	$\frac{4}{1.8} = 2.222$
7. Ironing	1.7	1.7	$\frac{4}{1.7} = 2.3529$
8. Packaging	1.75	1.75	$\frac{4}{1.75} = 2.2857$
Total direct labor content = 16.65 minutes/shirt.			

$$\text{The process capacity} = \text{bottleneck capacity} = \text{capacity of sewing - Part 2} = 2 \text{ shirts/minutes.}$$

$$= 2 \times 60 \times 8 = 960 \text{ shirts/day.}$$

## Demand.

$$16000 \text{ shirts/month} = \frac{16000}{20} = 800 \text{ shirts/day.}$$

The process capacity > Demand.

⇒ We can fulfill the demand.

⇒ No need of overtime work.

$$\text{Flow rate} = \min \{ \text{process capacity}, \text{Demand} \} = 800 \text{ shirts/day}$$

$$\text{Cycle time} = \frac{1}{\text{Flow rate}} = \frac{1}{800} = 0.6 \text{ minutes/shirt.}$$

$$\text{Work in process} = \underbrace{(16 + 14 + 12 + 12 + 12)}_{(\text{WIP})} \times \underbrace{60}_{\text{batch size.}}$$

$$= 11760 \text{ shirts.}$$

$$\text{Manufacturing lead time} = \frac{\text{Average inventory}}{\text{average flow rate}} = \frac{\text{WIP}}{800} = \frac{11760 \text{ shirts}}{800 \text{ shirts/day}}$$

$$= 14.7 \text{ days.}$$

Can system accommodate another 2000 shirts/month?

$$\text{New demand} = \frac{18000}{20} = 900 \text{ shirts/day.}$$

Yes, the system can handle.

$$\text{Direct labor utilization} = \frac{800 \times 16.65}{800 \times 8 \times 60} \times 100\% = 69.3\%$$

$$= \frac{40 \times 8 \times 60}{800 \times 8 \times 60} \times 100\% = 69.3\%$$

$$= 0.693 = 69.3\%.$$

$$\text{Direct labor cost/shirt} = \frac{40 \times 8 \times 300}{800 \times 8 \times 60} = \text{Rs. } 120.$$

$$= \frac{40 \times 8 \times 300}{800 \times 8 \times 60} = \text{Rs. } 120.$$

$$\text{Labor productivity} = \frac{\text{Output (shirts)}}{\text{Input (labor hours)}} = \frac{800}{(40 \times 8)} = 2.28 \text{ shirts/labor hour.}$$

$$= \frac{800}{(40 \times 8)} = 2.28 \text{ shirts/labor hour.}$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. } 808.80.$$

$$= \frac{1690500}{(800 \times 20 \times 12)} = \text{Rs. } 8.80.$$

$$\text{Total average cost/shirt} = 350 + 225 + 225 + 8.80 = \text{Rs. }$$