Faculty of Engineering Department of
Textile Engineering Report ON
Study On Industrial Engineering in Sweater Production
Course Code: TE-4214
Course Title: Project (Thesis)

Submitted By

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Assistant Professor

A thesis that was turned in to partially meet the requirements for a Bachelor of Science in Textile Engineering degree.

Technological Advancements in Apparel Production

Duration: From November 10,2023 to December 29,2024

APPROVAL LETTER

To
The Head

Textile Engineering Department

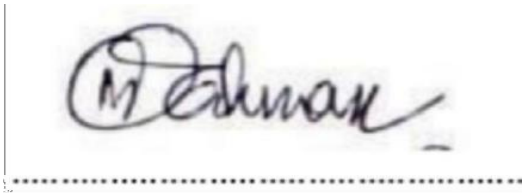
Daffodil City Ashulia,Birulia Saver Dhaka,1216

Subject: The project report for the B. sc.in TE program has been accepted.

Respected
I'm writing to let you know that the student with ID 173-23-5164 has finished the project " and it is prepared for final review. The entire report is predicated on careful research, critical evaluation of actual evidence, and the use of relevant resources. The report has become crucial in giving the readers useful information, and the student was actively involved in their project activities.

Therefore, I would be very grateful if you would accept my report and consider it for the final assessment.

Yours,

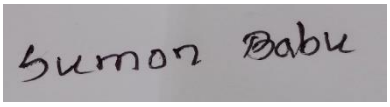


Mr,Md.Mominur Rahman
Assistant professor
Department of TE
DIU

PROCLAMATION

I so certify that Md. Mominur Rahaman, an assistant professor in the Textile Engineering Department of Daffodil International University, oversaw the completion of this work. Furthermore, we declare that this project and none of its elements have.

Prepare By:



ID=173-23-5164

Student signature

ASSERTIVE

For enabling me to complete this study assignment, I am primarily thankful to Allah Ta'ala. I want to thank my supervisor from the bottom of my heart. We appreciate Mominur Rahaman, an assistant professor in the Textile Engineering Department of Daffodil International University, for her guidance and help in creating this study. I have learned a lot from working with him, but I have also been inspired by his creativity. His ideas and techniques were just astounding.
Without his constant encouragement, I don't think I could have completed my education. For their significant assistance, I am thankful to Md. Mominur Rahaman, an assistant professor in the Textile Engineering Department, as well as a few of my Daffodil International University students.

COMMITMENT TO OUR LOVED TEACHER AND RESPECTED PARENTS

Content ……

List of Graph

CHAPTER 1: OVERVIEW

1.1 The Report's Objective

Sales in the apparel sector depend heavily on efficiency. It is essential to use system, labor, and machinery appropriately. Eliminating waste of time, money energy, and materials is the main objective, according to the institute of industrial Engineers.

This report goal clear we worked for defined objectives. Here are some answers about the proper structure of a high-quality organization.

1.1 Importance & Scope:

- ✓ This report's goal is clear we worked for defined objective.
- ✓ Here are some answers about the proper structure of a high-quality Arrangement.

1.2 Research limitations:

- ✓ to increase the work process's efficiency.
- ✓ Reduction waste.
- ✓ To obtain higher quality.

CHAPTER 2: REVIEW OF LITERATURE

2.1 Industrial Engineer:

a subfield of engineering known as" industrial Engineering" focuses on production engineering and use engineering and technology to try to boost output.

The primary component of industrial engineering is work study. There are two sections to the work

study. 1.Methodological analysis.

2.Studying time.

2.2 Method Study:

It is study of work practices for a project in order to improve layout,design,and procedure, A swell as to lower costs. And tiredness and create simpler, more efficient techniques.

2.3 Time Study:

A method of measuring work that determines basic time calculating cycle time and adding allowance.

CHAPTER-3 METHODOLOGY

Data Collection:
I gather information on our experience in many areas of a factory that makes knitted clothing. We first gather information from the department of industrial engineering, and then we gather information from the Department of Merchandising. The production manager provides us with all of the information, and we gather data from the line where we conduct us re.

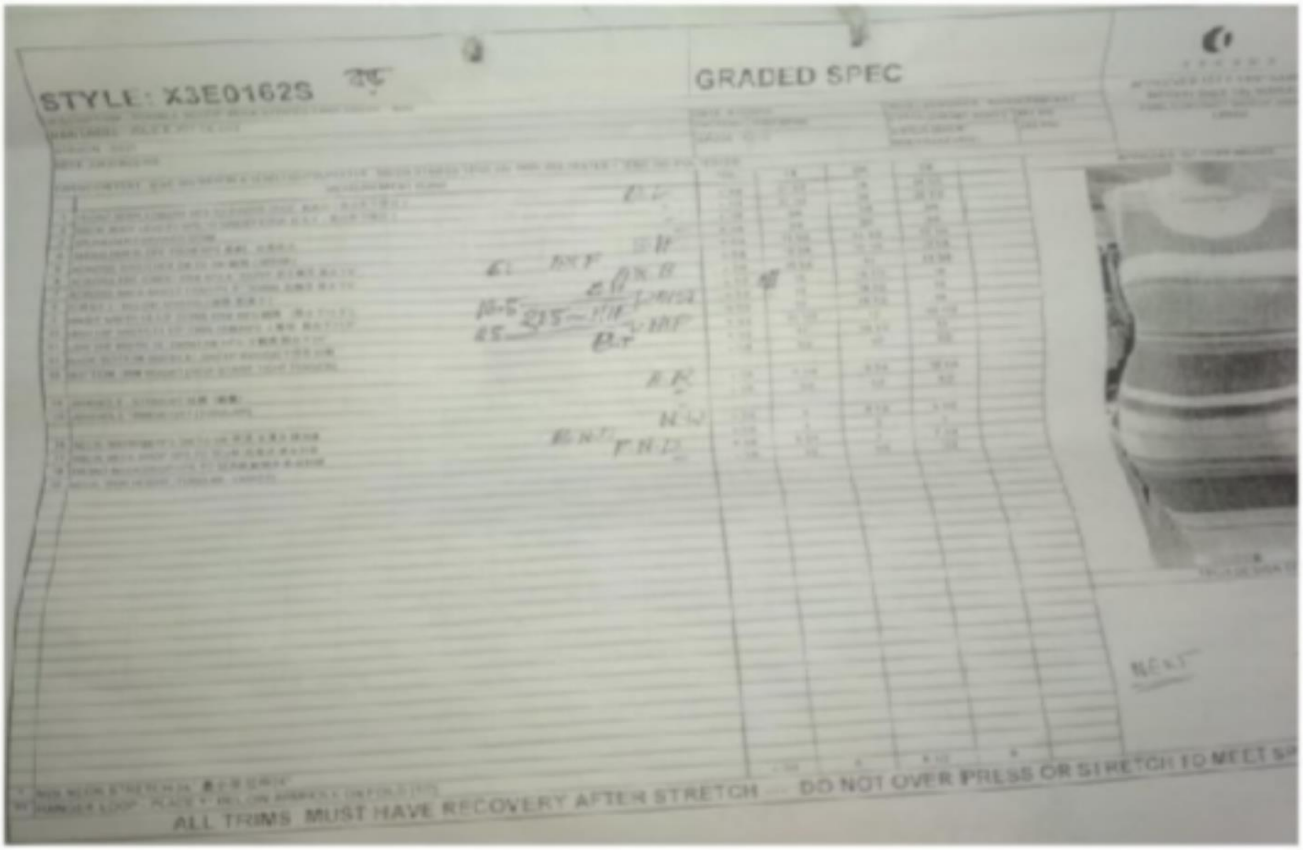
3.1 Product Information:

Name of the buyer: FARIZ DESIGN Name of Style: X3E0162S.
There are 65 machines in all 51 operators in all. There are fifty operators in all. SMV TOTAL:23.80
GOAL:1250.420
1400 is the capacity.

3.2 Product Sketch:

3.1 Figure: Pullover with sleeves

3.1 Measurement Sheet:

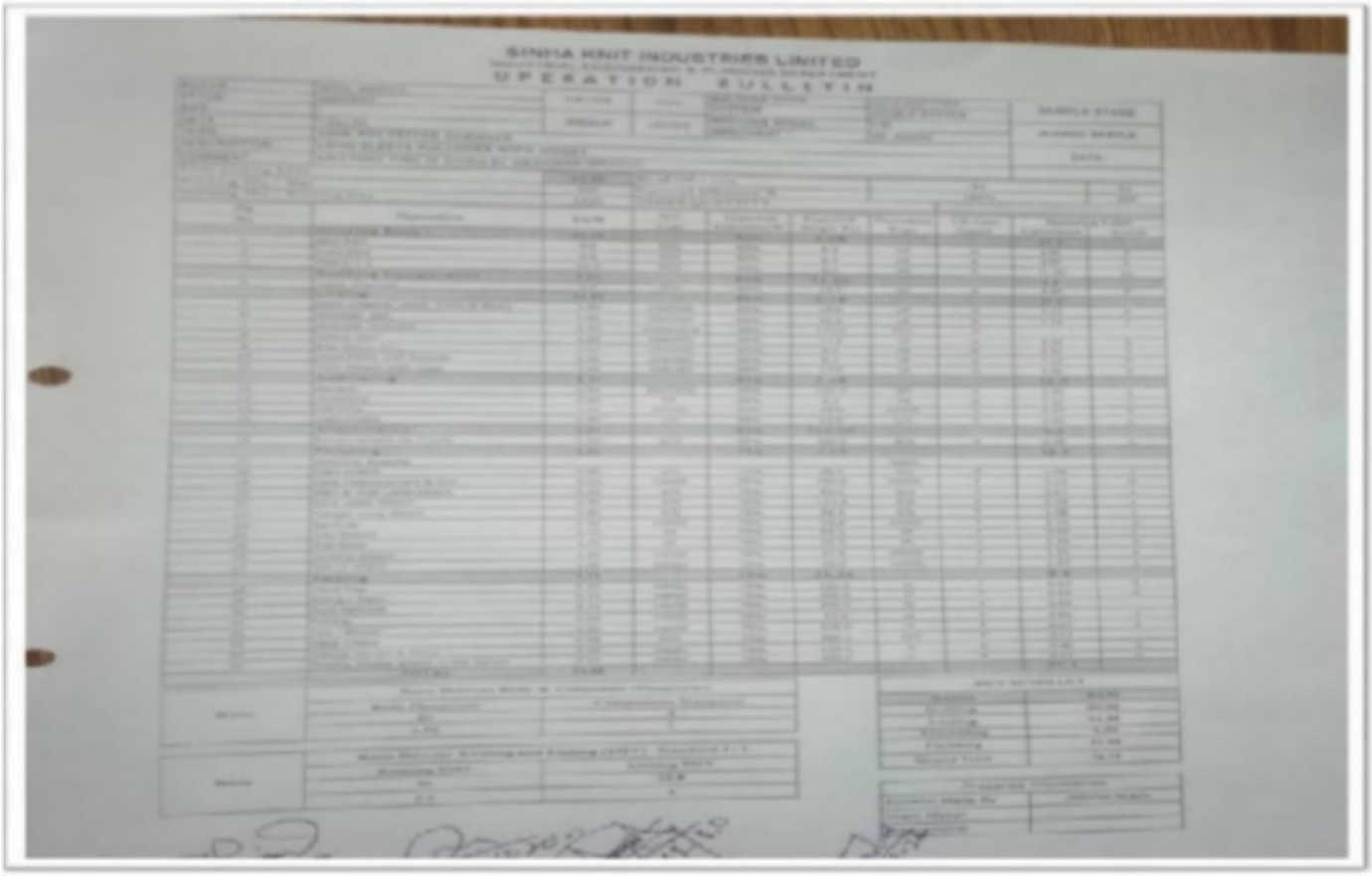


3.2 Figure of Long Pull-over Sleeve

3.2 Operation Breakdown:

To complete the breakdown, the work-study officer and the APM technician chief must sit down together. During the procedure, the technician separates the garment in to its component sections and gathers each one individually.

3.2.1 Chart of Operation Breakdown:



3.3 Operation Bulletin Figure

3.1 Actual SMV in Line:

Operation No	Operation	SAM
	Knitting Body	76
1	Back Part	8
2	Front Part	8
3	Sleeve X2	10
	Knitting Component	4
4	Neck Placket	4
	Linking	23.80
5	Stitch(sleeve, Hood, Front &Back)	3.50
6	Shoulder Over Join	1.00
7	Shoulder Over Lock	0.30
8	Sleeve Join	4.50
9	Side seam Join	5.50
10	Hood Mackwith Placket	6.00
11	Neck Attached with Hood	3.00
12	Bartech	0.50
13	Trimming	6.00
14	Minding	2.00
15	Light Check	0.80

	Attachment	0.50
16	Button Attach	0.50
	Finishing	9.60
17	Washing Sweater	1.00
18	Light Check	0.80
19	Loop Measurement & cut	0.10
20	Main & size label Attach	0.50
21	Carrier Label Attach	0.40
22	Hanger Loop Attach	0.80
23	Re-Final	2.40
24	IronSleeve	0.70
25	Iron Body	1.70
26	Dusting Attach	1.20
27	Get Up Check	1.00
	Packing	1.78
28	Hand Tag	0.20
29	Sizing / Ratio	0.15
30	Dust Remove	0.15
31	Folding	0.60
32	Poly/Blister	0.20
33	MetalCheck	0.08
34	Making Carton Close	0.30
35	Shipping Sticker Attach in the carton	0.10
	Total	74.98

3.2 Calculation:

60/SMV is the hourly target.
Hourly Line Goal = 60 * Employee Count/Total GMT SMV
Line Daily Goal = 60 * Worker Count * Working Hour / Total GMT SMV

3.1 The following supposition forms the basis of the analysis that follows:

1	The worker's number	62
2	Efficiency of the factory	100%
3	No Hours of Work	8
4	Total SMV or GMT	23.80

Day Line Goal = 60 * Worker Count * Hours of Work * Total GMT SMV

= (60 * 62 * 8)/23.8 * 100 \% = 1250 Pces

Pecs's Day Target = 1250 Pces

Target per hour = 60 / s * mv X Man power X w/H = 60/23.8 * 62 * 1 = 156.3Pcs

3.1 Simple Calculation of Pitch Time: In this case, operation number 51, Total

SMV = 23.80 Thus, Total GMT SMV Pitch Time No of Operation

= 23.8/51 =0.47

Maximum Control Point = Pitch time + Expected Efficiency

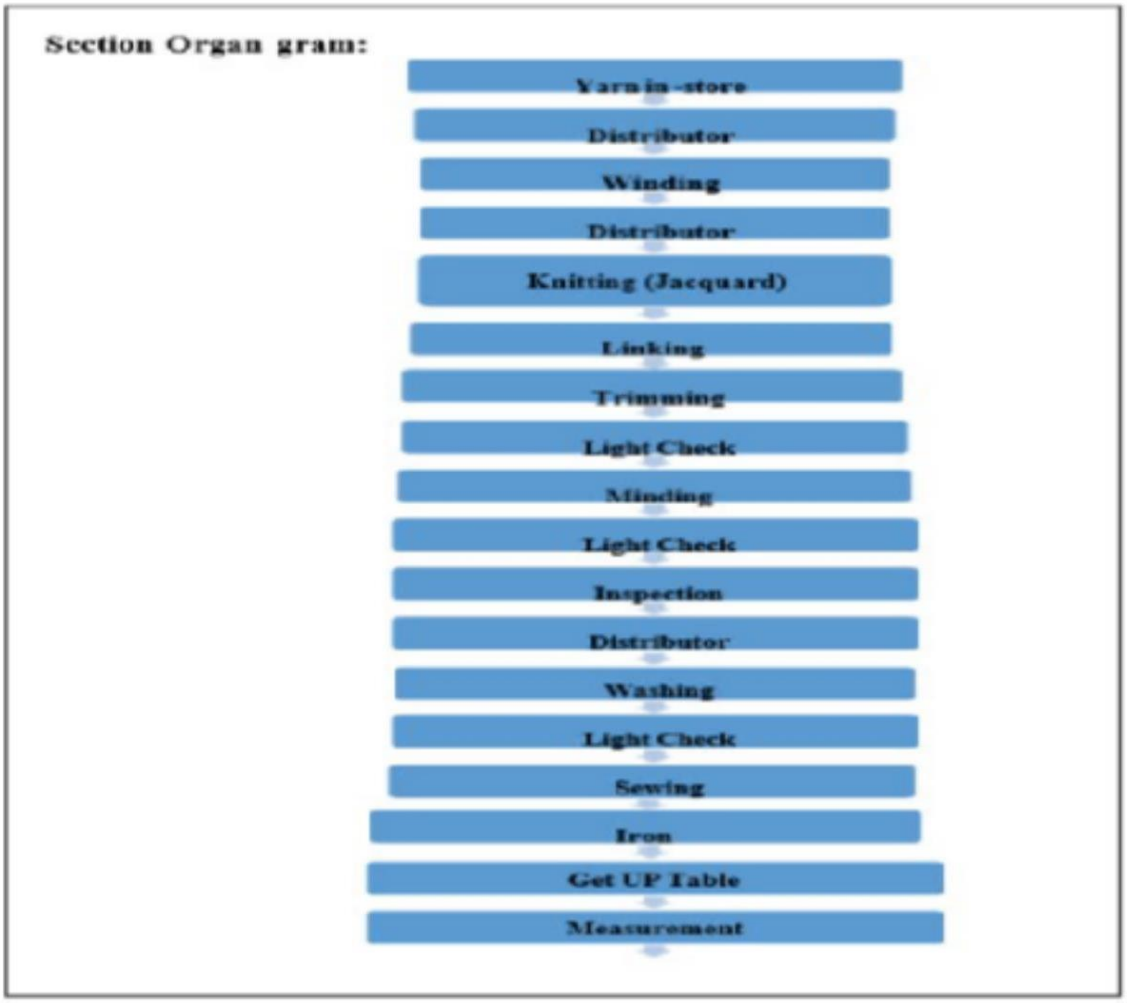
= (0.47/76) %

The lower limit is equal to, (2xpitch time - UCL) = (2 * 0.47) - 0.61 = 0.33

3.2 Layout Plan:

The normal operation breakdown serves as the foundation for this layout plan.

Section Organogram,



3.2 The following presumptions form the basis of the analysis that follows:

Operator	61
Efficiency of the factory	85%
Hours of work	8
Total GMT	27.30

Capacity of Day line= 608*No of worker*W/H*Efficiency/Total GMT

=60*61*8*85%/27.30

= 911.64 Pcs

3.3 Line Balancing:

Better Distribution of the necessary joys employees result in line balance, which cuts down on writing time.

- We must pay attention of the following facts and information in order to maintain line balance
- The operator Name

- The SMV operation


SINHA KNIT INDUSTRIES LIMITED

Linking, Trimming, Mending Line wise Target

Prepared By · Manager (IE & Planning) · PM · P. AGM · Director (M & O)

3. 5 Illustration of Linking Blanching Trimming Mending

3.4 Line Balancing Calculation:

- **Linking:**

Line A=60÷ Man Power × SMV × Working Hour

= 60 ÷ 20 × 25 × 8

=500

Line B=60÷20× 25 × 8

=500

Line C= 60 ÷ 16 × 27 × 8

= 810

Line D=60÷17× 27 × 8

=762.35

Line E=60÷ 21 × 8 × 8

=182.85

Line F=60÷ 14 × 27 × 8

=925.71

Line G=60÷ 18 × 18 × 8

= 480

Line H=60÷ 14 × 8 × 8

=274.28

3.5 Calculation of Efficiency:

W/H=8 SMV=23.80
Manpower=62 in this case
OutPut=911.64

So,

Line Effeiency (%) $= \frac{Production/Days \times SMV}{Total\ Man\ Power \times W/H \times 60}$

$= \frac{911.64 \times 2380}{62 \times 8 \times 60} \times 100$

$= 72$

3.5 SMV Calculation:

Bellow analysis is subjected to the following suppositions:

Linking Operation:

Sleeve Stitch Cycle Time is 15sec, 40sec, 45sec, 41sec, 43sec the ranking for operator performance i
80% what is SAM&SMV.

SMV

Basic Time=Cycle Time× Perfomance rating

=Average Cycle Time× Performance Rating

$= \frac{15+40+45+41+45}{5}$

=29.44

SAM=Basic Time +(Bundle + Machine+ Personal Allowance)

=29.44+0.2944+0.2944+0.2944

=30.32sec

Here,

Bundle allowance of 10%

M/C Allowance: 10%

Performance Allowance: 10%

$= \frac{30.32}{30M}$

$= 1.010$

$SMV = \frac{29.44}{60}$

=0.49

CHAPTER-4 RESULT AND DISCUSSION

4.1 Operation Breakdown:

Result:

I gather a variety of facts for our test in this thesis.

Discussion: This product is a long-sleeved pullover, and because of the operational breakdown, it might be A challenging task.

With a daily intake of 1250 pieces and an output of 1400 pieces in this line, the manpower is

high at 62. Discussion:

Some administrators and partners lack talent, which has reduced the line's efficiency and prevented Them from achieving their objectives.

4.2 Time Study:

Result:

Using a stopwatch, we measured the cycle time and averaged it. We obtained the initial time after

adding the Rating. After uploading 10% of cur allotment using primary, we received 23.80 SMV.

Next, we determined that Pitch

Time was 0.47.0.61 for the higher manage limit and 0.33 for the lower

manage limit Discussion:

If the long pull SMV exceeds twenty-three, lines take twenty-three minutes. The garment's pitch

time is 0.47. The top control limit is 0.61 and the average operating time is 0.47.

This demonstrates which indices stand for the operation's maximum.

It has a lower control limit of 0.33 times and a duration of 0.61. There must be a minimum of 0.33 minutes between operations.

4.3 Line Target:

Result:

With 100% performance and SMV=23.80, the street target is equivalent to 1250 shares on an hourly and daily basis.

Discussion:

We obtained the data from the line, and when the line performance reached 70%, we computed the target, which Came out to be 1250 pieces each day. However, we have observed that the daily manufacturing target is 1400 Pieces.

4.4 Production Capacity:

Production ability:

In this case, working hours are eight hours, but two hours of overtime are added as the shipment date draws Near and the shipment target is not reached, making working hours 10 hours. There is a daily Manufacturing capacity of 1250 pieces (8 hours of work plus lunch).

CHAPTER -5 CONCLUSION

5 Conclusion:

These days, industrial engineering plays a vital and important role

in the clothing industry. I learned a lot of,

Interesting facts and techniques regarding industrial engineering from this test.

In industrial engineering, I observe a lot of problems, and we also know how to organize all of the work in this industry and resolve issues by conducting.

Before IE the apparel industry had many problems, such as distribution, layout, production capacity, And daily goal capacity. We found that the standard minute value (SMV) was 23.80 after the test.

We also found that the aim was 1400, the capacity was 1400, the efficiency was 70%, the manpower was 62, The pitch time was 0.47, the UCL was 0.61, and the LCL was 0.33. Following IE and planning, line balance, Daily line targets, and increased production capacity are put into practice. Additionally, it helps us adjust to Modern life and expand our knowledge of machines, acquisition techniques, development techniques.

Generation structure, and material organization

REFERENCE

The article “Industrial Engineering November 2019’ can be found on Wikipedia. This article explains how to calculate the production capacity of htm,line – blanc-bottlenknock-garments production.html.

1. 1. (http://textielearner.blogspot.com/2016/09/) the standard minute value in the apparel sectom

2. http://www.garment smerchandising.com/tag/What is line-balancing?

3. haps://www.onlineclothingstudy.com/2013/02/ Engineering Tools

4. https://www.scribd.com/document/218512437

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